## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MAN 11,1 p 1

7. Edition

estoil-ISC

FES 6 A 95 D 410 LS 2542 Z RQV 250-1100 AB 1038 DL (1) .. LS 2542 250/1100 AB 1049 DL (2) RO .. IS 2542

RQ 250/1050 AB 965 DL (3)

Komb.-Nr. 0 400 846 425 (1) MAN-Nr. 1-7960 0 400 846 427 (2) MAN-Nr. 1-7946

0 400 846 418 (3) MAN-Nr. 1-7941

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes7 . 84 company: MAN

engine: D2566

(1) MSFV-162 kW/22UU min/1

(2) MFOR-162 kW/2200 min/1

(3) MF -172 KW/2100 min/1

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC) Cy1. 6 Rotational speed Control rod **Fuel delivery** Difference Control rod **Fuel delivery** Spring pre-tensioning (torque-control valve) cm<sup>3</sup>/ rev/min cm3/100 strokes 100 strokes cm<sup>3</sup>/100 strokes mm 1100 11,3 - 115 11,3+00,3(0,6) 12,0-12, 12,9 - 13,11050 250  $0,8 - 1,5 \mid 0,3(0,5)$ 5,9-6, 6,5-6,71, 1 - 1, 7

Adjust the fuel delivery from each outlet according to the values in [

**B. Governor Settings** 

(1)

Upper rated s	speed	1		Intermediate	rated spe	eed		Lower rated	speed			Sliding	leeve travel
deflection	rev/min Control rod travel	Control rod (	<b>(9</b> )	Degree of deflection of control		Control travel	rod	Degree of deflection of control		Control retravel	od	Sildings	1
lever	mm	rev/min (	<b>2a</b> )		rev/min	mm	4	lever	rev/min	mm	(3)	rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
max.	1140	14,4-17	<b>,</b> 6	-	-	-	•	ca.13		min.7 5,9-6	,1	700	0,5-1,2 4,3-4,6
ca.42	10,3 4,0 1300	1140-115 1175-120 0 - 1,0	05					(3a)	450	380 =2 0-1	<b>,</b> U	1140	8,3

Torque control travel a = 0.35

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (2b) limitation intermediate speed	Fuel deliv	rery characteristics 5a speed 5b	Starting Idle switchir		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min (48)	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9+0 1
1100	112,5-114,5 (110,5-116,5		700	102, 5-105, 5 (100, 5-107, 5	100 )	124,0-134,0		11,3 11,7
		,	500	max. 106,5 (108,5)	250	6,0 mm RW	500	11,7
•					100-	- -170 (80-190)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.84

Checkin PRG che	ig of slider eck	Full-load :	•	-	cifications (4)	Idle spe	<b>-</b>		cifications (5)	Torque	
rev/min	travel	rev/min 3	Control rod travel mm 4	Control rod travel rnm 5	rev/min 6	rev/min 7	Control rod travel		Control rod travel mm	rev/min	travel
600	15,6-16,4	600	16,0	10,2	1145-1160 1185-1215		6,0	100 250	min.7,5 5,9-6,1	845	11,2-11,3 11,2-11,5 11,4-11,6
				4,0	1105-1215			360-	400 =2,0	600	11,6-11,7

Torque-control travel on flyweight assembly dimension a -

0,3 mm

Speed regulation At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever mp 40°C (104 F)	Control rod stop	Fuel deliv	ery characteristics 3b	Starting fuel delivery Idle speed Cor		
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min	rnd travel cm <sup>3</sup> /1000 strokes / mm 7	
(2) 1100	112,5 - 114,5 (110,5 - 116,5)		700	102, 5 - 105, 5 (100, 5 - 107, 5)	100	125,0-135,0 (122,0-138,0) = 15,0-16,0mmR	
			500	max. 106,5 (max. 108,5)	250	6,0 mm RW	

**B.** Governor Settings

(3)

Checkin PRG che	ig of slider	Full-load Setting p	•	•	cifications (4)	Idle spe	•		cifications (5)	Torque		(3)
rev/min	Control rod travel mm	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min	Control rod travel mm 8	rev/min	Control rod	rev/min	Control rod travel	<u>ی</u>
600	15,6-16,4	600	16,0	11,0	1095-1110	250	6 <b>,</b> 6	100	min. 8,1	_	-	:
			!	4,0	1145-1170			250	6,5-6,7			
								375-	415=2,0			
1250	0 - 1		<u> </u>					450	0 - 1			

Torque-control travel on flyweight assembly dimension a

mm

Speed regulation At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

ev/min (	cm <sup>3</sup> /- 1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	Control rod travel cm <sup>3</sup> /1000 strokes / mm
1	:		17	5	6	7
(3) 1050	127,5 - 129,5 (125,5 - 131,5)		500	max. 113,5 (115,5)	100	124,0 - 134,0 6,0 mm RN

En Checking values in brackets

#### **Test Specifications** Fuel Injection Pumps 1 WPP 001/4 MAN 16,0 d and Governors 9. Edition

PE10A90D520/5 LS 2515

ROV 250-1250 AB993DR

RQ 250/1250 AB832DR ./. RQ 250/1250 AB992DR ./. supersedes 3.85 MAN

D 2530 MF engine:

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2 0 -45-72-117-144-189-216-261-288-333<sup>5</sup> ±0,5°(0,75°) All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
1,50-1,60
Port closing at prestroke (1,45-1,65)

mm (from BDC)

Cyl. 10

company:

	(1,45-1,05)				
Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
11,5-11,	6 10,2 - 10,3	0,3(0,45)	11,5-11,	10,3-10,4	<del>,</del>
7,4-7,6	0,9- 1,5 C, 4-5 -			0,9- 1,5	
	Control rod travel mm 2 11,5-11,	Control rod travel  mm cm³/100 strokes 2 3  11,5-11,6 10,2-10,3  7,4-7,6 0,9-1,5	Control rod travel  mm cm³/100 strokes 2 3 Difference cm³/ 100 strokes 4 11,5-11,6 10,2-10,3 0,3(0,45) 7,4-7,6 0,9-1,5 0,2(0,4)	Control rod travel  mm cm³/100 strokes 2  11,5-11,6  10,2-10,3  0,3(0,45)  11,5-11,6  0,9-1,5  0,2(0,4)  7,4-7,6	Control rod travel  mm cm³/100 strokes 2  11,5-11,6  10,2-10,3  0,3(0,45)  11,5-11,6  10,2-1,5  0,2(0,4)  7,4-7,6  0,9-1,5

Adjust the fuel delivery from each outlet according to the values in [

Testoil-ISO 4113

#### **B.** Governor Settings

ROV..993 DR

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding sleeve travel		
deflection		Control rod (la	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		1	
	rod travel mm	rev/min (2a)	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm	
1	2	3	4	5	6	7	8	9	10	11	
max.	1275	14,4-17,4	-	-	-	ca.13	100 250	min.7,2 5,6-5,8	200 700	0,5-1,2 4,4-4,8	
ca.48	10,5 4,0	1290-1300 1365-1395					310-3 450	0 - 1	270	8,3	
	1450	0 - 1,0				<u>3</u>					

Torque control travel a = 0,6+0,1 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-s limitation intermediate	$\sim$	Fuel deliv	very characteristics (5a) speed (5b)	Starting Idle switchir		Torque- travel	Control Control rod
rev/min	cm³/1000 strokes	rev/min	•	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1 <b>000</b> strokes	rev/min	travel mm
1	2	3		4	5	6	7	8	9
1250	102,5-103,5	1290 -	1300*	800	95,5- 98,5	100	135,0-145,0	1250	11,5+0
	(100, 5-105, 5)				(93, 5-100, 5)	250	7,0 mm RW	900	11,9+0
				500	90,0- 94,0			500	12,3+0
		Ì			(88,0- 96,0)	100-	170 (80-190)		./.
İ					4.4				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

Checkin PRG che	g of slider	Full-load : Setting po	•	•	cifications (4)	ldle spec	-		cifications (5)	Torque o	control (3)
rev/min	Control rod travel mm	rev/min	control rod travel rmm	Control rod travel rnm	rev/min	rev/min	rod travel	i	Control rod travel mm	-	travel mm
	2	3	<u> </u>	5	6	/	8	9	10	11	12
600	15,6-16,4	600	16,0	10,5	1295-1310	250	6,1	100	min.7,6	-	-
				4,0	1345-1375			250	6,0-6,2		-
				1500	0 - 1,0			500-	420 =2,0 0 - 1		
											:
L			L .	1	<u> </u>	l		L		<u>L</u>	

on flyweight assembly dimension a =

Speed regulation At 1295-1310 min<sup>-1</sup>

1 mm less control

### C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever pp 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting f	tuel delivery 6
rev/min	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	rod travel cm <sup>3</sup> /1000 strokes / mm 7
1250	101,5 - 102,5 ( 99,5 - 104,5)		500	78,0 - 86,0	100	129, 25 - 139, 25
	( 77,3 - 104,3)			(76,0 - 88,0)	250	7 mm RW
				!	:	; ; ; ;

Chacking values in brackets

**Festoil-ISO 4113** 

#### **B.** Governor Settings

RQ..992 DR

Checkin PRG che	g of slider	Full-load :	•	•	cifications (4)	Idle spe	•		cifications (5)	Torque o	
rev/min	Control rod travel	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel	ļ	Control rod travel	rev/min	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,5	1295-1310	250	6,0	100	min.7,5	1250	11,5-11,6
				4,0	1365-1395			250	5,9-6,1	1000	11,8-12,0
			     	1500	0 - 1,0			360-4 500	00 =2,0 0 - 1	600	12,2-12,4
			L				: !		740	<b>,</b>	

Torque-control travel

0,25 <sub>mm</sub>

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

1 2 3 4 5 6 7 1250 102,5 - 103,5 - 800 95,5 - 98,5 100 135,0-(132,0-100,5)	6 Control	uel delivery d	Starting to	naracteristics (3b)	Fuel deliv	Control rod stop 3a	Full-load delivery on governor control lever Test oil temp 40°C (104-F)		
(100, 5 - 105, 5) (93, 5 - 100, 5) (132, 0 - 18, 3 - 100, 5)	rod trave	cm <sup>3</sup> /1000 stro		/-1000 strokes	rev/min	rev/min 3	strokes	cm <sup>3</sup> /-1000 stre	rev/min 1
500 90,0 - 94,0 mm RW	145,0 148,0) 19,3	135,0-1 (132,0-1 = 18,3-1	100		800	-	-	1	1250
(88,0 - 96,0) 250 7,0 m	ım RW	mm RW 7,0 mm			500				

En Checking values in brackets

## Test Specifications Fuel Injection Pumps ① and Governors

WPP001/4KHD1i1

2. Ausgabe

Testoil-ISO 4113

PES6A80D410/3 RS2527

RQV 300-1400AB951DL (1-2)

RQ.. 935DL (3-6)

supersedba 80 compan KHD engine. F6L912/913

Hinweise für Pos. 2 und 6 Seite 4!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(1.85-2.05)

mm (from BDC)

	,	1,05 2,057				
Rotational speed rev/min	Control rod travel mm	Fuel delivery  cm³/100 strokes 3	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1400	12,0+0,1	6,8 - 7,0	0,2(0,35			·
300	8,0-8,2	0,9 - 1,5	0,2(0,3)			
	į				•	

Adjust the fuel delivery from each outlet according to the values in

#### B. Governor Settings

RQV 300-1400 AB951DL (1-2)

Upper rates s	pood		intermediate	rated sp	eed .	Lower rated	speed		Sliding	sieeve travel
deflection	rev/mun Comirot rod travel mm 2	Control rod travel mm (20)	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min	mm
ca.68  ca.65	1470 1 <u>7</u> 0 <u>0</u> 11,0 4,0	15,2-17,8 0 = 1 1440-1450 1545-1575	•	•	-	ca.12 410-650	300 530-5 850	min.7,5 5,9-6,1 590 =2,0 0,1		0,7-1,3 4,0-4,4 8,3
		n a				<b>②</b>				

Torque control travel a = U , y min

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-red Test oil ten		Rotational-speed 20 Fuel delivery characteristics Se Starting fuel delivery filmitation stermediate speed Sb Starting point 6				Torque- travel	Control rod	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
(1) 1400	69,0 - 70,0 (67,5 - 71,5)	1440-1450*	700	64,5 - 66,5 (63,0 - 68,0)		17,3-17,6 mm RW	1400 1150 700	12,0-12, 12,3-12, 12,8-13,

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.82

#### **B.** Governor Settings

Checkin PRG che	(1)	Full-load Setting p		d regulation   Idle speed regulation   Torque control   Test specifications   Setting point   Se						control (3	
rev/min	Control rod travel mm 2	rev/min	Contral rod travel rnm 4	Contrat rad travel rnm 5	rev/min	rev/min 7	Control red travel mm	rev/min	Control rod travel mm 10	rev/min	travel
700 VH=4	19,2-20,8 9°	700	20,0	11,0 4,0	1445-1460 1540-1570	I	9,0		min.10,5 8,9-9,1 630= 2,0 max.1,0	1400 950 700	12,0-12,1 12,5-12,8 13,0-13,2
`	ontrol travel	<u> </u>	0.4						1601		

Torque-control travel
on flyweight assembly dimension a =

0,4

Speed regulation At

mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop 3a	Fuel deliv	ery characteristics (3b)	Starting t	. —
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>1</sup> /-1000 strokes	rev/min	Contrel red travel cm 1/1000 strokes / mm 7
(3)		• -		1	· -	_
1400	69,0 - 70,0 (67,5 - 71,5)		700	64,5 - 66,5 (63,0 - 68,0)		
				•	! : !	

Checking values in brackets

#### **B.** Governor Settings

RQ 300/1325 AB935DL

(4)

Checking PRG che	g of slider	Full load :	•	_	cifications (4)	idle spec	•			Torque o	
rev/min	Control rod travel	rev/min	Central red travel mm	Control rod travel mm	rev/min	Setting previous	Contrati	rev/min	cifications (5) Control rod travel mm	rev/min	Control rod travel
800	19,2-20,8	800 VH ca			1370-1385 1450-1480	300	9,1	100 300	min.10,6	1325	11,3-11,4
	Abregel- beginn							590- 700	530=2,0 0 - 1	l	11,5-11,6 12,4-12,5
1600	0 - 1										

Torque-control travel on flyweight assembly dimension a =

шш

Speed regulation At

mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting Idle spec	ruel delivery 6
rev/min	cm³/~1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes / mm
(4) 1325	55, 5 - 56, 5 (54, 0 - 58, 0)		750	51,5 - 54,5 (50,0 - 56,0)	100	119,5 - 129,5

PRG check 1 Setting		Full load Setting pi	· · · · · · · · · · · · · · · · · ·			.1	ed reguli point		ecifications (5)	Torque control		
rëv/min 1	Control rod travel mm	rev/min 3	Central red travel mm	Control red travel mm 5	rev/min	rev/min 7	Contrel rod travel mm	rev/min	Control rod	rev/min	Control rod traver mm	
800 VH=	19,2-20,8 49°	800	20,0	11,5 4,0	1295-1310 1370-1400	i	8,5	100 300 580- 750	min.10 8,4-8,6 520 =2,0 max. 1,0	950	12,5-12,6 13,0-13,3 13,5-13,6	
orque-c	ontrol travel		0.4		<u> </u>	L	l	L	<u> </u>	<u> </u>		

on flyweight assembly dimension a

Speed regulation At

1 mm less control

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp 40°C (104°F)	Control rod stop  (3a)	Fuel deliv	ery characteristics (3b)	Starting f	luel delivery					
rev/min 1	cm <sup>1</sup> /-1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min	Control red travel cm <sup>3</sup> /1000 strokes / mm 7					
(5) 1250	66,5 - 67,5 (65,0 - 69,0)		800	64,0 - 66,0 (62,5 - 67,5)		-					
hactura	alues in beackate										

### **B. Governor Settings**

	PRG check (1)		Setting point   Test specifications (4)				Idle speed regulation Setting point   Test specifications (5)				Torque control	
rev/min 1	Control rod travel mm 2	revimin	Control red travel mm	Control rod travel mm 5	rev/min 6	rev/min 7	Contret rod travel	1	Control rod travel mm	rev/min 11	travel	

Torque-control travel on flyweight assembly dimension a =

Speed regulation At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting t	. —
:ev/min	cm³/-1000 strokes 2	rey/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	Control red travel cm³/1000 strokes / mm 7
		•				
						! ! !
•						
Checking	alues in hrackets		Ĺ			

#### Hinweise:

Bei Pos. 2 - PES 6 A 80 D 410/3 RS 2527 mit RQV 300-1400 AB951DL und Pos. 6 - PES 6 A 80 D 410/3 RS 2527 mit RQ 300/1250 AB935DL

werden vom Kunden anstelle der Motorleistung teilweise eine Motor-Schlüsselzahl auf dem Typenschild des Motors angegeben.

Diese Motor-Schlüsselzahlen 1025, 1032, 1034, 1035 und 0708 ergeben eine reduzierte Vollastmenge:

n 1250 = 57, 5 - 59, 5 cm<sup>3</sup>/1000 H.

n  $850 = 55, 5 - 57, 5 \text{ cm}^3/1000 \text{ H}$ .

Ab Motor-Nr. 6216 324 gilt jedoch:

n 1250 = 63, 5 - 65, 5 cm<sup>3</sup>/1000 H.

n  $850 = 60, 5 - 62, 5 \text{ cm}^3/1000 \text{ H}.$ 

Dies ist bei Neueinstellungen und Kontrollmessungen unbedingt zu beachten!

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 KHD 5,1 f

1. Edition

PES 5 A 80 D 410/3 RS 2347

EP/RS 325/1400 AOB 699 DL

Komb.-Nr. 9 400 093 406 1-3-5-4-2 je 72° ± 0,5° (± 0,75°) company KHD F5L 913

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

1,9-2,0 Port closing at prestroke (1,85-2,05)

Testoil-ISO 4113

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>2</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,2+0,1	6,4-6,5	0,25(0,4)			
325	8,4-8,6	1,0-1,3	0,2(0,35)			
				i i		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	hate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed   Control rod   travel   mm	3 To	rque control  Control rod  travel  mm
loose	800° x =	0,3-1,0	-	**	-		325 300 400	8,3 8,4-9,1 6,0-6,8	1400 700 500	11,8-12,1
VHca.60 FHmax.	8,7 4,0 1600	1400-1450 1500-1530 0,3-1,7					550 1350	3,5-4,0 2,8-3,2		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Fu	ill-load stop	Rotational- speed limitat				Starting fuel delivery (5) (4a) Idle stop				
Test oil to	emp 40°C (104°F)	Note changed to ) rev/min	rev/min	cmลี/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm		
1	2	3	14	5	6	7	8	9		
1400	64,5-65,5 (63,0-67,0)	1430-1440*	700	57,0-59,0 (56,5-59,5)	100	100,0-140,	0 -	-		
			500	54,5-56,5 (53,5-57,5)						

Checking values in brackets



<sup>\* 1</sup> mm less control rod travel than col 2

## **Test Specifications** Fuel Injection Pumps 1 WPP 001/4 KHD 1 1 4 and Governors

1. Edition

PE 10 A 95 D 610/4 LS 2452

ROV 300-1250 AB 1129 L

supersedes

company:

**KHD** 

F 10 L 413 F

228 kW (310 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

 $0 - 27 - 72 - 99 - 144 - 171 - 216 - 243 - 288 - 315^{\circ} \pm 0.5^{\circ} (\pm 0.74^{\circ})$ 

#### A. Fuel Injection Pump Settings

1 - 10 - 9 - 4 - 3 - 6 - 5 - 8 - 7 - 2

Port clc sing at prestroke mm (from DC)

Rotational speed rev/min		Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,3+0,1	9,2 - 9,4	0,3(0,6)			
300 800	1	1,21,6 C, Sp.4 u. 5	0,3(0,5) 0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed		Intermediat	e rated sp	eed	Lower rated	speed		Slidina s	leeve travel
Degree of deflection of control		Control rod travel	of control		Control rod travel	Degree of deflection of control		Control rod travel		0
lever 1	mm 2	rev/min (2	lever 4	rev/min 5	mm (4)	lever 7	rev/min 8	mm (3) 9	rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca.14	100	min.19,0		1,0-1,2
ca.44	9,3 4,0 1475	1290-130 1365-139 0 - 1,	5				300	6,4-6,6	550 900 1250	3,4-3,8 5,4-5,6 8,0
						<b>3</b> a)	¥2			

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed 2b limitation intermediate speed	high idle speed (5)		Starting Idle switchir	• •	Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 8	travel mm 9
1250	90,5-92,5 (88,5-94,5)	1290-1300*	800	90,0-93,0 (88,0-95,0)	100	119,0-129,0	1250 500 800	10,3+0,1 10,5+0,1 10,5+0,1 10,3+0,2

Checking values in brackets

\* 1 mm.less control rod travel than col. 2

1.82

Testoil-ISO 4113

and Governors

**Test Specifications** 

1. Edition

PES 4 AM 90 D 410 RS 2017

RQV 300-1425 AB 740 L

company: Daimler Benz

OM 314

62,5 kW (85 PS)

1 - 3 - 4 - 20 - 90-180-270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

mm (from BDC)

RW 10,5 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,7-9,8	6,2-6,3	0,3(0,25)			_
300	6,8-7,0	0,9-1,5	0,2(0,25)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	speed		Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
Degree of deflection	rev/min Control	Control rod (a)	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		
	rod travel		of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1425 1650	16,0-19,4 0-1				ca.10	100 300 570- 750	min.7,4 5,9-6,0 600 =2,0 0 =1,0		
ca.61	8,7 4,0	1460-1470 1535-1565				(3a)		,,		

Torque control travel a =

mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil ten	stop np. 40°C (104°F) 2	limitation intermediate speed	high idle s	, we	idle switchir	ng point	travel	Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 6	cm <sup>3</sup> /1000 strokes	rev/min	mm 9
1400	62,5-63,5 (61,5-64,5)	1460-1470*	100	13,7-14,3 mm RW		7		
					100-	220 (80-240)	·	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

11.80

Testoil-ISO 41

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB5,7w

1. Edition

PES 6 AM 90 D 410 RS 2016

ROV 300-1425 AB 740 L

supersedes Daimler-Benz

OM 352 company:

96 kW (130 PS)

1 - 5 - 3 - 6 - 2 - 4 je  $60^{\circ}$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
(1,85-2,05)
Portclosing at prestroke
1,00-2,00 mm (from BDC) Port closing at prestroke

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1400	9,7-9,8	6,2 - 6,3	0,3(0,25)			
300	6,8-7,0	0,9 - 1,5	0,2(0,25)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	ed .	Lower rated	speed	1	Sliding sleeve travel	
deflection	rev/min Control	Control rod ta	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		0
of control lever	rod travel	mm rev/min (2a)	of control lever	rev/min	mm (4)	of control lever	rev/min	mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1425	16,0-19,4				ca.10	100	min.7,4		
	1650	0 - 1					300	5,8-6,0		
ca.61	8,7	1460-1470			ļ		570-6	00 = 2,0		
i	4,0	1535-1565					750	0 - 1		
						(3a)				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		intermediate speed		Starting Idle switchin	<u> </u>	Torque- travel	Control 5  Control rod travel mm	
1	2	3	4	5	6	7	8	9
1400	62,5-63,5 (61,5-64,5)	1460-1470*			100	13,7-14,3 mm RW		
					100-	1 220 (80-240)		L

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10.80

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## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 5,7w7 1. Edition

PES 6 A 90 D 410 RS 25 69

RQV 300-1400 AB 1111L

supersedes

company: Daimler Benz OM 352

96 kW (130 PS)

1 - 5 - 3 - 6 - 2 - 4 0 - 60-120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

RW 10,5

Port closing at pres Rotational speed	Control rod	2,25-2,35 Fuel delivery	mm (from BDC) Difference	Control rod	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm <sup>3</sup> /1 <b>00</b> strokes 3	mm 6
1400	10,1	5,9 - 6,0	0,3(0,45)			
	+0,1					
300 500	8,4-8,6	1,0 - 1,6 C.SP. 4-5	0,2(0,4) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed	•	Slidina s	leeve travel
	rev/min Control	Control rod travel	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		<u> </u>
of control lever	rod travel mm	mm rev/min (28)	of control lever	rev/min	mm (4)	of control lever	rev/min	тт (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1400 1630	15,2-17,8 0 - 1,0				ca.15	100 300	min.8,5 8,4-8,6	300 670	1,1 3,9-4,1
ca.65		1440-1450 1530-1560				(3a)	610-6	70 = 2,0	1450	8,1

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		limitation	Fuel delivery characteristics 5a high idle speed 5b		Starting Idle switchin		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1400	59,5-60,5 (57,5-62,5)	1440-1450*	500	51,5-54,5 (49,5-56,5)	100 300	72,25-82,25 15,1- 15,5 mm RW 10,25-16,25	1000 630	9 10,1-10,1 10,4-10,7 11,1-11,3 11,4-11,5

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.81

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WPP 001/4 1. Edition

En

PES 6 A 100 D 410 RS 3026

Port closing at prestroke

Festoil-ISC 4113

EP/RSV 400-1100 A7B767L (1)

supersedes\* John Deere

.. RS 3027

..A28789DL(2)

6404A (1) 6466D (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

(1) Port closing mark 14 ° after port closing.

**A. Fuel Injection Pump Settings** 2,00-2,10(1,95-2,15)

1,95-2,05(1,90-2,10) (from BDC)

(2) Port closing mark 15 ° after port closing.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery (1) cm³/100 strokes 3	Difference cm³/ 100 strakes 4	Control rod travel mm 2	Fuel delivery (2) cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1070	10,6	11,2-11,4	0,3(0,6)	10,8	11,0-11,2	
	+0,1			+0,1		
400 525/550	6,2-6,4	1,1- 1,5 C 4,5	0,3(0,5) 0,4(0,7)	6,2-6,4	1,0-1,5	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

(1)

Degree of	r rated speed Control rod travel		Interme	ediate rate	d speed	4 Control-	Lower	rated speed	3 To	rque control
deflection of control lever 1	mm 2	mm rev/min	4	5	6	lever deflection in degrees 7	rev/min	mm 9	rev/min	travel mm
100se	800	0,3-1,0		· • · · · · · · · · · · · · · · · · · ·		ca.30	400	5,8		
	x	= 5,75					100 400	min. 19 6,2-6,4		
ca.72	1145-11	120=9,6 150=4,0 0,3-1,7					400-500 550	=2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>E</b>	ill-load stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting f	Starting fuel delivery 5 4a Idle stop		
Test oil te rev/min 1	cm³/1000 strokes	Note changed to ) rev/min 3	rev/min	cm³/1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control root travel mm
1070	112,0-114,0 (110,0-116,0)	1110-1120*			100 400	156-176 11,5-15,5		
				d-	1150 ispersion	11,5-21,5 n max.5(6)		./.

Checking values in brackets

\* 1 mm less control rod travel than col 2

5.79

A14.

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed   Control rod   travel   mm   2		Intermed	diate rated	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	11 ~ /	rque control   Control rod   travel   mm
loose	800	0,3-1,0			ca.21	400	5,8	1100	10,8-10,9
	Х	= 3,5					min. 19 6,2-6,4	800	11,5-11,8
ca.44	1225-1	150=9,7 235=4,0 0,3-1,7				450-510 600	=2,0 0 - 1	400	12,7-12,8

### C. Settings for Fuel Injection Pump with Fitted Governor

	uil-load stop	Rotational- speed limitat.		el delivery aracteristics	Starting f	uel delivery 5	(4a) Idi	e stup
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes	rev/min 8	Control rod travel mm
LDA 1100 LDA 550	110,0-112,0 (108,0-114,0) 0 bar	1140-1150*	LDA 525 1200	0,7 bar 120,5-123,5 (118,5-125,5) 23,5- 33,5 (18,5-38,5)	100 400	** 186-206 11,5-15,5		

Checking values in brackets

#### D. Adjustment Test for Manifold Pressure Compensator

Testatn =

Testoil-ISO 4113

rev/min increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel-
	Gauge pressure = bar	Gauge pressure = bar	mm
3027 with 789 DL	0		10,4 - 10,5
		0,11	10,8 - 10,9
		0,30	11,8 - 12,0
		0,68	12,3 - 12,4

Notes:

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

En

<sup>\* 1</sup> mm less control rod travel than col. 2

<sup>\*\*</sup> Testing the hydraulic start-locking device Locking at 0,48 - 0,76 bar

40

WPP 001/4
1. Edition

En

PES 6 A 100 D 410 LS 3029; RSV 400-1100 A 2 B 2019 DL

supersedes -

company

John Deere 6466 A

engine 646

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing mark cyl. 1: 15° after port closing

Port closing at prestroke

estoil-ISO 4113

1,95-2,05 (1,90-2,10)

mm (from BDC)

sp	eed	travel	Fuel delivery cm³/100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	1100	11,0	11,5-11,7	0,3(0,5)			
	400	6,2	1,0-1,4	0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

(1) Uppe	r rated speed	l rev/min	Interme	diate rated	d speed	4	Lower	rated speed	(3) fo	rque control
Degree of deflection	Control rod travel	Control rod travel				Control- lever		Control rod travel		Control rod travel
of control tever	mm 2	mm rev/min	4	5	6	deflection in degrees	rev/min	mm 9	rev/min	mm 11
<u>'</u>		13	<u>                                     </u>	<u> 1°</u>	10	<u> </u>	0	9	10	<u> </u>
loose	800	0,3-1,7				ca.19	400	6,0	1100	0
1	x = 3	<b>,</b> 5					100	19,0-21,0	750	0,75
ca.43	1150	10,0	4				400	6,2		
	1200	5,0				•	470-530	= 2,0		
(2a)										,

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(40)	ull-load stop	6 Rotational- speed limitat		iel delivery naracteristics	Starting t	fuel delivery 5	4a Idle stop	
Test oil to rev/min 1	emp 40°C (104°F) cm3/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm³/1000 strokes 5	rev/min	cm³/1000 strokes	rev/min	Control root travel mm
LDA 1100	0,70 bar 115,0-117,0 (114,0-118,0)	1145-1155* (1140-1160)		0,70 bar 124,5-127,5 (123,5-128,5) 0 bar 83,0-89,0 (81,0-91,0)	100 400 1200	166-196 11,0-15,0 23,5-33,5		

Checking values in brackets

\* 1 mm less control rod travel than col 2

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung  $_{\kappa}$  1980 by Robert Bosch GmbH. Postfach 50. 2-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

### D. Adjustment Test for Manifold Pressure Compensator

Test at n =

550

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel	diminution , difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
3029 with2019 DL	0,08 - 0,11	0,46 - 0.53		

Notes

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

WPP 001/4 1. Edition

PES 6 A 100 D 410 RS 3031

EP/RSV 400-1100 A2 B2046D

supersedes\_

company John Deere 6404 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05

Testoil-ISO 4113

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm³/100 strokes	cm³/ 100 strokes	mm	cm³/100 strokes	·mm
1050	11 1	11 2 11 6	0.2	2	3	6
1050	11,1	11,2 - 11,4	0,3			
400	6,5	1,1 - 1,5	0,3			
Port cla	ogina mark d	yl. 1 : 14° at	fter nort	closing		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	r rated speed	rev/min	Intern	nediate rat	ed speed	(4)	Lower	rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm 9	rev/min	Control rod travel mm
loose	800	0,3-1,0				ca.21	400	6,1	1050	11,1
	x =	3,8					100	19-21	750	12.0
ca.42	1095-1 1150	105=11,1 5,0					400 480-540	6,6 2,0	750	12,0

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	ill-load stop	6 Rotational- speed limitat		uel delivery	Starting (	uel delivery 5	(4a) Idi	e stop
Test oil te rev/min	cm <sup>9</sup> /1000 strokes	Note changed to ) rev/min	rev/min	cm³/1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1050	1,3 bar 112,0-114,0	1095-1105*	LDA 750 LDA 550	1,3 bar 121,0-125,0 0 bar 49,0- 53,0	100 400 1150	156-176 11,5-15,5 23,5-33,5		

Checking values in brackets

\* 1 mm less control rod travel than col 2

10.79

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#### D. Adjustment Test for Manifold Pressure Compensator

Test at n =

550

rev/min decreasing pressure – in bar gauge pressure 大気を発見

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
3031 with 2046 D	0,75	0,42	11,1 9,2-9,4
Switching point (hydr. measurement)	0,75	0,45	

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 HAN 10,8 f 3. Edition

En

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

1,80-1,90 RW 10,5 FB.-Diff. RW 9,0 / RW max. 5,5 - 6,5

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm³/100 strokes	100 strokes	mm 2	cm³/100 strokes	mm 6
1100	11,5	15,0-15,2	0,3(0,5)	10,0	8,9-9,7	-
	+0,1			+0,1		
350	7,3-7,5	1,3-1,9	0,3(0,5)	6,7-6,9	1,4-2,0	
700/500		C 4- 5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1119DR (1)

14 1 7	rated speed Control rod travel mm	rev/min Control rod travel mm rev/min	Interme	ediate rate	ed speed	Control- lever deflection in degrees 7	rev/min	er rated speed   Control rod   travel   mm   9	3 To	rque control  Control rod  travel  mm
loose ca.56	4.0	0,3-1,0 5,50 1140-1150 1190-1220 0,3 - 1,7				ca.24	350 100 350 435-49 550	5,5 min.19 5,9-6,1 95 = 2,0 0,1	1100 550 400	11,5-11,6 11,5-11,7 12,7-13,3

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	II-load stop	6 Rotational- speed limitat	(3a) Fu	Fuel delivery Starting characteristics Idle		uel delivery 5		
Į	emp 40°C (104°F) cm <sup>3</sup> /1000 strokes	Note changed to ) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes 7		Control rod travel mm 9
(1)	150,0 - 152,0 (148,0 - 154,0)	1140-1150*			100	19 - 21mm	RW	

Checking values in brackets

\* 1 mm less control rod travel than col 2

2.81

**BOSCH** 

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#### **B.** Governor Settings

11 1 7 ''	r rated speed Control rod travel mm		Interme	odiate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	~ ,	rque control   Control rod travel   mm   11
loose	800	0,3-1,0				ca.21	350	5,5		± 0,1
	х	4,50					100	min.19		40.5
ca.52	9,0 4,0 1350	1140-1150 1160-1190 0,3-1,7					350 480-540 600	5,9-6,1 = 2,0 0 - 1	1010 500	10,5 10,9

### C. Settings for Fuel Injection Pump with Fitted Governor

(4)	II-load stop emp. 40°C (104°F)	Rotational- speed limitat.		et delivery aracteristics	Starting fo	uel delivery 5		stop Control rod
rev/min	1	changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min	travel mm 9
(2) 1100	93,0-95,0 (91,0-97,0)	1140-1150*	700 500	100,0-103,0 ( 98,0-105,0) 92,0- 94,0 (90,0- 96,0)	100	19-21mmRW		

Checking values in brackets

Testoil-ISO 4113

\* 1 mm less control rod travel than col. 2

#### **B.** Governor Settings

14 . /	r rated speed Control rod travel mm		Interme	diate rated	speed 6	Control- lever deflection in degrees 7		rated speed   Control rod   travel   mm	rev/min	rque control Control rod travel mm
loose	800 x =	0,3-1,0				ca.22	350 100	6,8 min.19	1100	± 0,1 9,9
ca. 52	8,9 4,0 1370	1140-1150 1165-1195 0,3 - 1,7					350 525-585 700	7,2-7,4 = 2,0 0 - 1	1010 500	10,4 10,9

### C. Settings for Fuel Injection Pump with Fitted Governor

(4)	il-load stop	6 Rotational- speed limitat.		lel delivery laracteristics	Starting f	uel delivery 5	(4a) Idio	e stop
Test oil to	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
(3) 1100	87,5-89,5 (85,5-91,5)	1140-1150*	700 500	91,5-94,5 (89,5-96,5) 83,0-85,0 (81,0-87,0)	100	19-21mmRW	٠	

\* 1 mm less control rod travel than col. 2

<sup>\*\*</sup> Cold-start test according to VDT-I-DAF 004, see page 2 1121DR (3)

WPP 001/4 OPE 2,3 a

1. Edition

VE 4/9 F 2100 L 37

Overflow temperature 45° C

supersedes

0 460 494 020

021

Ope1 company: 2,3 1

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

see VDT-W-460/.

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
, 1.1 Timing device travel	2000	7,4-7,8	mm		
1.2 Supply-pump pressure	2000	7,4-8,0	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1250	41,5-42,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure			cm <sup>3</sup> /1000 strokes		
1.4 Idle regulation	300	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.54,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2440	11,0-17,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	2000				

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	600 0,8-1,8(0,6-2,0)	1250 3,9-4,7(3,6-5,0)	2000 (6,9-8,3)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 3,3-3-9		
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		2100 55-110(40-125)
2 3 Fuel deliveries				3. Dimensions

		1		T
2 3 Fuel deliveries				
Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2520 2440 2130 2000 1250 600	35,7-38,3	(10,0-18,0) (33,9-38,5) (34,7-39,3) (39,7-44,3) (33,0-39,0)	
switch-off electr.	2100	0		
End stop	400-500 300 380 440	0	(4,0-12,0)	
2.4 Solenoid	cut-in voltage	min. rated volta	10,0 V ge 12 V.	

3. Dimens	tor assembly and adjustment
K KF MS SVS	3,2-3,4 5,7-5,9 1,7-1,9 max.4,9
K L	20,0-22,0

Clearance between idle position and stop for increased idling: 0,5-1,0 mm

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CAC:

6

Testoil-ISO 4113

## Test Specifications Distributor-type Fuel-injection Pumps

44

WPP 001/4 OPE 2,3b 1. Edition

En

VE 4/9 F 2000 L 37-1

Overflow temperature 45° C

supersedes -

company: Opel

engine: TL 0125-2,3 1

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0 460 494 046

mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/crn²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	7,9-8,3	mm		
1.2 Supply-pump pressure	2000	6,9-7,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1250	41,5-42,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without			cm³/1000 strokes		
charge-air pressure 1.4 Idle regulation	300	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.54,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2440	11,0-17,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	2000				

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	600 1,5-2,5(1,3-2,7)	1250 4,4-5,2(4,1-5,5)	2000 (7,7 <b>-</b> 8,8)
2.2 Supply pump	n = rev/min bar (kgt/cm²)	600 3,6-4,2	1250 5,1-5,7	
Overflow delivery	n = rev/min cm³/10 s	500 55-110(40-125)		2000 55-110(40-125)
			12	Dimensions

2.3 Fuel deliveries					3
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)	0
End stop	2520 2440 2000 1250 600	max. 12,0 34,2-36,8 34,5-37,5	(10,0-18,0) (33,2-37,8) (39,7-44.3) (33,0-39,0)		
switch-off	2000	0			
Idle stop	400-500 300 380	0	(4,0-12,0)		
2.4 Solenoid	440 cut-in voltag	e min.	10,0 V		

3. Dimens Designation	sions tor assembly and adjustment mm
к	3,2-3,4
KF	5,4-5,6
MS	1,7-1,9
svs	max.3,4
≉ K ₹ L	20,2-22,2
Observations	

BOSC

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WPP 001/4 VWW 1,6 v 3 1. Edition

1000

(1,1-2,5)

VE 4/9 F 1000 R 85-5

2. Test Specifications

n = rev/min

mm

2.1 Timing device

Overflow temperature 45° C

supersedes

**VWW** company: 068.5 engine:

0 460 494 092

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

estoil-ISO 4113

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	1,6-2,0	mm		
1.2 Supply-pump pressure	1000	3,7-4,5	bar (kgf/cm²)		
1.3 Full-load delivery with	1000	24,5-25,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm <sup>3</sup> /1000 strokes		
charge-air pressure 1.4 Idle regulation			cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 35,0	cm <sup>3</sup> /1000 strokes		
1 6 Start	1100	12,0-18,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

	1111111					
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,1-2,7				
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-	125)		1000 55-1100	) )(40-125)
2.3 Fuel deliveries Speed control lever	Rot. speed	Fuel delivery		Charge-air press bar (kgf/cm²)	3. Dimens	for assembly and adjustment
End stop	1200-1280 1100 1000 600	0	(11,0-19,0) (22,7-27,3) (16,5-22,5)		k kf ms svs + FH	3,2-3,4 5,7-5,9 1,2-1,4 max.2,5 1,8-2,4
switch-off	1000	0			久 K 貝 L	18,4-20,4 5,9-8,3
Idle stop End stop	400 500				Observations + operat (cold-	ing stroke start accel.
					ľ	

checking values in brackets (

600-750

Start

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2.4 Solenoid

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min. 10,0 V

rated voitage 12 V

cut-in voltage

40

WPP 001/4 VMA 3,6a 1. Edition

En

VE 6/11 F 2100 L 63 0 460 416 014 Overflow temperature 45° C

supersedes "

company: VM Cento engine: HR 692 HT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,2

 $_{mm} \pm 0.02(0.04)$ 

see VDT-W-460/...

1. Settings	Rot speed rev/miri	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1800	6,6-7,0	mm	0,67	
1.2 Supply-pump pressure	1800	6,6-7,2	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with	600	36,0-40,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
charge-air pressure Full-load delivery without	1500	47,5-48,5	cm³/1000 strokes	0,67	
charge-air pressure 1.4 idle regulation	450	10,0-14,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
1 5 Full-speed regulation	100	min. 42,0	cm <sup>3</sup> /1000 strokes	0	
1 6 Start	2400	22,0-30,0	cm <sup>3</sup> /1000 strokes	0,67	
1 7 Load-dependent port-closing	5			-	

2. Test Spec	cifications	checking values in brackets (	)		
2.1 Timing device LDA=0,67 bar	n = rev/min mm	1000 2,3-3,1(2,0-3,4)	1500 4,9-5,5(4,5-5,9)	1800 (6,1-7,5)	2150 7,9-8,6
2.2 Supply pump LDA=0,67 bar	n = revanin bar (kgf/cm²)	400 1,7-2,3			2100 7,8-8,4
Overflow delivery n = rev/min cm <sup>3</sup> /10 s		500 55-110(40-125)	21		2100 10(40-125)
			T I	0 0:	•

		<u> </u>				
2.3 Fuel deliveries						
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)		
End stop	2450 2400 2150 2100 1500 +600	9,0-15,0 43,2-45,8 43,9-46,5 38,5-41,5	(7,5-16,5) (21,5-30,5) (41,7-47,2) (42,5-47,9) (45,3-40,7) (37,3-42,7) (34,6-41,4)	0,67 0,67 0,67		
switch-off	2100	0				
Idle stop End stop	620-700 450 400 470	0	(7,5-16,5)	0 0		
2.4 Solenoid	cut-in voltage min. 10,0 V rated voltage 12 V.					

3. Dimensions tor assembly and adjustment mm					
6,3-6,5					
0,9-1,1					
max.2,2					
1,8-2,4					
20,2-22,2					
10,8-13,1					

<sup>+</sup> LDA-stroke 4,0 mm. Use adjusting nut (46) to correct.

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Testoil-ISO 4113

# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 2,0 a1

1. Edition

En

VE 5/10 F 2400 L 35 - 2

Overflow temperature 45° C

0 460 405 003;

004

supersedes -

company: VWW

engine: Audi 100

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,14

mm ±

 $\pm$  0,02(0,04)

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel  1.2 Supply-pump pressure  1.3 Full-load delivery with charge-air pressure Full-load delivery without charge-air pressure  1.4 Idle regulation  1.5 Full-speed regulation  1.6 Start  1.7 Load-dependent port-closing	1400 1400 1400  375 100 °	2,6-3,0 5,0-5,6 33,5-34,5  6,0-10,0 min.56,0 22,0-26,0	mm bar (kgf/cm²) cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes		2,5(3,0) 2,5(3,0)

2. Test Spe	cifications	checking values in bra	ickets ( )			
2.1 Timing device	n = rev/min mm	1000 1,4-2,4(1,2-	-2,6)	1400 (2,1-3,5)	2400 5,1-5,9(4,8-6,2	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 2,8-3,4			_	400 -8,1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500   55-110(40-12	25)		55-11	400 0(40-125)
2.3 Fuel deliveries					3. Dimen	sions for assembly
Speed control lever	Rof. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2650 2500 2400 1400 750	28,0-31,0	(5,0-13,0) (20,0-28,0) (27,2-31,8) (31,7-36,3) (23.0-29,0)		K KF MS SVS	5,7-5,9 1,7-1,9 max.3,0
switch-off	2400	0			K L	18,5-20,5 9,0-12,5
Idle stop  End stop	500 375 400 500	max. 3,0 min. 23,0 max. 23,0	(4,0-12,0)		Observations	
2.4 Solenoid	cut-in volta	ge min.	10,0 V			

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46

WPP 001/4 PEU 2,3 hl
1. Edition

En

VE 4/10 F 2075 R 40-1 0 460 404 004 Overflow temperature 45° C

supersedes '

company: Peugeot engine: XD25 Autom.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

WISH

2. Test Specifications checking values in brackets (

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travet	1400	5,0-5,4	mm	0,67	
1.2 Supply-pump pressure	1400	5,1-5,7	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with	500	35,0-36,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
charge-air pressure Full-load delivery without	1000	47,3-49,7	cm <sup>3</sup> /1000 strokes	0,67	
charge-air pressure 1.4 Idle regulation	425	8,0-12,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
1.5 Fuil-speed regulation	100	min. 70,0	cm <sup>3</sup> /1000 strokes	0	
1.6 Start	2375	20,0-26,0	cm³/1000 strokes	0,67	
1.7 Load-dependent port-closing	1400			,	

2.1 Timing device	n = rev/min	750		1400	2000	
LDA=0,67 bar	mm	1,0-1,8(0	,7-2,1)	(4,5-5,9)	7,7-8,5(7	,4-8,8)
2.2 Supply pump LDA=0,67 bar	n = rev/min bar (kgf/cm²)	400 2,4-3			2075 6,5-7,	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-		Ę	2075 55-110(40-12	
2.3 Fuel deliveries	<u> </u>	<u> </u>			3. Dimen	for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2500 2375 2000 1750 1000 +700 500	47,3-48,3 47,3-49,7	(5,0-13,0) (19,0-27,0) (42,7-47,3) (45,5-50,1) (46,2-50,8) (39,0-45,0) (32,5-38,5)	0,67 0,67 0,67 0,67 0,67 0,25	K dim KF MS SVS	ension K 1 5,7-5,9 0,9-1,1 max.5,3
switch-off	2075	0			K L	20,1-22,1 9,5-13,3
Idle stop End stop	460-590 425 430 430	0	(6,0-14,0)	0 0 0	Use ac	troke 4,5 mm djusting nut to correct.
2.4 Solenoid	cut-in voltag	je	min 10 V	1-9		

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rated voltage 12 V

WPP 001/4 PEU 2,3h2

1. Edition

VE 4/9 F 2250 R 59 0 460 494 045

Overflow temperature 45° C

supersedes

company: Peugeot

XD 2

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	5,3-5,7	mm		
1.2 Supply-pump pressure	1400	5,4-6,0	bar (kgf/cm²)		
1.3 Full-load delivery with	1400	37,5-38,5	cm <sup>3</sup> /1000 strakes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 stroķes		
charge-air pressure 1.4 Idle regulation	300	21,0-27,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 45,0	cm³/1000 strokes		
1.6 Start	2400	9,0-15,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in brackets (	)		
2.1 Timing device	n = rev/min mm	600 1,2-2,0(0,9-2,3)	1400 (4,8-6,2)	2000 7,8-8,4(7,4-8,8)	2250 8,6-9,4(8,3-9,7)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,9-3,5			2250 (7,4-8,0)
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		Ę	2250 55-110(40-125)
2.3 Fuel deliveries				3. Din	ensions

	<u></u>	L	
2.3 Fuel deliveries			
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)
End stop  switch-off	2480-2550 2450 2400 2350 2250 2200 1400 1000 600	0 max. 6,0 (8,0-16,0) 19,0-27,0 (19,0-27,0) 33,2-35,8 (32,2-38,8) 33,5-36,1 (32,5-37,1) (35,3-40,3) 33,2-35,8 (32,2-36,8) 30,3-33,3 (28,8-34,8)	) ) )
Idle stop	380	5,0-9,0 (3,0-11,0)	
End stop	300 450 550	(20,0-28,0)	
2.4 Solenoid	cut⊣in voltage	min. 10,0 V	

55-110(40-125)							
3. Dinsensions for assembly and adjustment mm							
к dime	nsion K 1 5,7-5,9						
MS	1,0-1,2						
svs	max.4,0						
aX K BX L	20,1-22,2						
	0,9-14,5						
Observations							
	• '						

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**estoil-ISO 4113** 

## Test Specifications Distributor-type Fuel-injection Pumps

40

WPP 001/4 Ope 1,6d 1. Edition

En

VE 4/9 F 2300 R 82

0 460 494 071

Overflow temperature 45° C

supersedes Opel company: 2033-1,6 1

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,0-3,4	mm		
1.2 Supply-pump pressure	1500	5,0-5,6	par (kgi/cm²)		
1 3 Full-load delivery with	1500	30,5-31,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm <sup>3</sup> /1000 strokes		
charge-air pressure	425	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.4 Idle regulation 1.5 Full-speed regulation	100	min.42,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2575	17,0-23,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	1200 1,3-2,1(1,0-2,4)	150 (2,5-3	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,4-3,0		2300 7,6-8,2
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		2300 55-110(40-125)
2.3 Fuel deliveries		1 Fuel deliver	Charge-air orass	3. Dimensions for assembly and adjustment

2.3 Fuel deliveries					
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	
End stop	2975 2775 2575 2300 2000		(3,0-11,0) (16,0-24,0) (25,7-30,3) (26,2-30,8)		
switch-off	2300	0			
Idle stop	max. 1500 600 425	2,0-6,0	(0-8,0) (4,0-12,0)		
End stop	400 500	min.30,0 max.28,0			
2.4 Solenoid	cut-in voltage min. 10,0 V rated voltage 12 V.				

3. Dimens	tor assembly		
Designation	and adjustment		
К	3,2-3,4		
KF	5,7-5,9		
MS	1,2-1,4		
svs	max.2,0		
+FH	1,8-2,4		
X	24,2-26,2		
ex	9,9-13,2		
	1		

Observations + operating stroke (cold-start accel.)

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## Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 FIA 1,7e

1. Edition

VE 3/10 F 1800 R 83

Overflow temperature 45° C

supersedes

company: engine:

Fiat 8130.61. EVA

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0 460 006

0,3

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,0-4,4	mm		
•	1500	5,2-5,8	bar (kgf/cm²)		
1.2 Supply-pump pressure 1.3 Full-load delivery with	1500	42,5-43,5	cm³/1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 strokes		
charge-air pressure  1.4 Idle regulation	400	8,0-12,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.40,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	1900	26,0-34,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1500				

2. Test Spec	Cincations	checking values in b	rackets ( )	1500		
2.1 Timing device	n = rev/min mm	1000 1,7-2,5(1,	1,7-2,5(1,4-2,8) (3		1800 4,9-5,7(	4,6-6,0)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,2-2,8		1800 6,2-6,8		
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(4	0-125)		1800 55-110(40	
2.3 Fuel deliveries					3. Dimen	SIONS for assembly and adjustment
Speed control lever	Rot. speed	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	1990-2040 1950 1900 1860-1880 1800 1500 600	0 10,5-16,5 Start 39,0-41,0 33,0-36,0	(9,5-17,5) (26,0-34,0) (37,7-42,3) (40,7-45,3) (31,5-37,5)		K KF MS SVS	5,9-6,1 1,4-1,6 max.3,3
switch-off	1800	0			X K	20,2-22,
idle stop	520-620 400	0	(6,0-14,0)		Observations	
End stop	400 500					
2.4 Solenoid	cut-in voltag	e min.			:	

**BOSCH** 

Geschaftsbereich KH. Kundendienst, Kfz-Ausrüstung.

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44

WPP 001/4 VWW 2,3a

1. Edition

En

VE 6/10 F 2250 L 36 (P) Overflow temperature 45° C

supersedes VW company 087 LT

0 460 406 005; 006

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

fi

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	3,2-3,6	mm		
1.2 Supply-pump pressure	2000	6,3-7,1	bar (kgf/cm²)		
1.3 Full-load delivery with	1500	28,0-29,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm <sup>3</sup> /1000 strokes		
charge-air pressure	350	10,0-14,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.40,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2525	7,0-11,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in br	ackets ( )			
2.1 Timing device	n = rev/min mm	1500 1,1-1,9(0,8	3-2,2)	2000 (2,7-4,1)	3,9-4,7(3	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,6-3,	,4		2250 7 <b>,0-7,</b> 8	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-1	125)		22 55-110(4	
2.3 Fuel deliveries					3. Dimen	Sions for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	2525 2250 1500 750	23,8-25,8 27,5-30,5	(5,0-13,0) (22,5-27,1) (26,2-30,8) (26,0-32,0)	)	K KF MS SVS	3,2-3,4 6,4-6,6 1,4-1,6 max.4,5
switch-off	2250	0			x XK	20,1-22,1
Idle stop	400 350	2,0-8,0	(1,0-9,0) (8,0-16,0)		Observations	
End stop	400 500	min. 28,0 max. 29,0				
2.4 Solenoid	cut-in volta	age min rated volt	. 10,0 V age 12 V.			

Testoil-ISO 4113

WPP 001/4 MAN 3,7c 1. Edition

VE 4/10 F 1500 R 57-1 0 460 404 014

Overflow temperature 45° C

supersedes MAN

company: D 0224 ME

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers  $0\,\text{,}\,2$ 

Test Instructions and Test Equipment

see VDT-W-460/...

mm Pre-stroke setting

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1	1000	5,3-5,7	mm		
1.1 Timing device travel	1000	5,5-6,1	bar (kgf/cm²)		
1.2 Supply-pump pressure	1000	61,5-62,5	cm <sup>3</sup> /1000 strokes		2,5(3,5)
1.3 Full-load delivery with charge-air pressure			cm <sup>3</sup> /1000 strokes		
Full-load delivery without charge-air pressure	350	10,0-14,0	cm <sup>3</sup> /1000 strokes		2,5(3,5)
1.4 Idle regulation	100	min. 60,0	cm³/1000 strokes		
1.5 Full-speed regulation	1650	4,0-10,0	cm³/1000 strokes		
1.6 Start	1000		2		
1.7 Load-dependent port-closing					

2. Test Spe	cifications		1000	1400
2.1 Timing device	n = rev/min	600 2,6-3,4(2,3-3,7)	1000 (4,8-6,2)	7,8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 3,6-4,2		1400 7,0-7,6
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		1500 55-110(40-125)
2.3 Fuel deliveries			Charge our proces	3. Dimensions tor assembly and adjustment

2.3 Fuel deliveries			
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1680-1740 1650 1550 1480 1000 600	0 (2,5-11,5 max.60,0 68,5-71,5 (67,3-72, 59,3-64, 57,25-60,75(55,6-62,	7) 7)
switch-off	1500	0	
Idle stop	400-450 350	0 (7,5-16,5	5)
End stop	400 470		
2.4 Solenoid	cut-in volta	min.20,0 V rated voltage 12 V.	

SS.	Designation	111111
	K KF MS SVS	 5,7-5,9 1,1-1,3 max.4,0
	A K B L Observations	25,0-27,0 12,2-15,5
	pushing el	ectronagnet

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WPP 001/4 Sof 2,5b 1

1. Edition

En

¥8 4/9 F 2100 R 22-3

Overflow temperature 45° C

supersedesSof im company: 8140.6.1 engine

0 460 494 024

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers ± 0,02 (0,04) mm

Test Instructions and Test Equipment

Pre-stroke setting

0,3

see VDT-W-460/...

1. Settings	Rot speed rev/min	Settings	- make a commence of the comme	Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1800	7,4-7,8	mm		
1.2 Supply-pump pressure	1800	6,3-6,9	bar (kgf/cm²)		
1.3 Full-load delivery with	2000	37,5-38,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm <sup>3</sup> /1000 strokes		
charge-air pressure 1.4 Idle regulation	370	8,0-12,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.55,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2350	19,0-25,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	1800				

2. Test Spe	cifications	checking values in brackets (	)	and the state of t
2.1 Timing device	n = rev/min	400 1,8-2,8(1,6-3,0)	1800 (6,9-8,3)	2100 8,3-9,3(8,1-9,5)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,9-3,5		2100 6,9-7,5
Overflow delivery	n = rev/min crn <sup>3</sup> /10 s	500 55-111(40-126)		2100 55-111(40-126)
				2 Dimensions

2.3 Fuel deliveries				
Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500 2350 2100 2000 1100 600	max. 3,0 36,7-39,3 43,5-46,5 35,3-38,3	(18,0-26,0) (35,3-40,3) (35,3-40,3) (42,7-47,3) (33,8-39,8)	
switch-off	2100	0		
ldle stop	500 370	max.3,0	(6,0-14,0)	
2.4 Solenoid	cutiin vo	itage min	. 10V	

	3. Dimens	for assembly and adjustment
	Designation	mm
i	K	,
	KF	5,4-5,6
	MS	1,7-1,9
	svs	max.2,7
	+ FH	1,8-2,4
		İ
	A	
	В	ļ
	Observations	
	+ operating (cold-st	ng stroke cart accel.)
	1	

BOSCH

rated voltage 12 V.

WPP 001/4 RVI 1. Edition

En

VE 4/12 F 1500 R 51

0 460 424 001

Overflow temperature 45° C

supersedes

RVI-Saviem

engine:

720 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

~- mm

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,1-3,5	mm	0,67	
1.2 Supply-pump pressure	1000	5,3-5,9	bar (kgi/cm²)	0,67	
1.3 Full-load delivery with	900	63,5-66,5	cm <sup>3</sup> /1000 strokes	0	2,5(4,5)
charge-air pressure Full-load delivery without	900	83,0-84,0	cm³/1000 strokes	0,67	
charge-air pressure	300	20,0-26,0	cm³/1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min.100,0	cm <sup>3</sup> /1000 strokes	0	
1.6 Start	1675	9,5-15,5	cm <sup>3</sup> /1000 strokes	0,67	
1.7 Load-dependent port-closing					

2. Test Spec	cifications	checking values in b	rackets ( )		······································		
2.1 Timing device	n = rev/min mm	700 1,2-2,0(0,9	9-2,3)	1000 (2,6-4,0)	140 4,9-5,7(4		
2.2 Supply pump	n = rev/min bar (kgf/cm²)	300 2,7-3,0			1500 6,9-7,5		
Overflow delivery	n = rev/min cm³/10 s	500 15 55-110(40-125) 55-110(					
2.3 Fuel deliveries					3. Dimen	and adjustment	
Speed control lever	Rot. speed	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm	
End stop	1700-1780 1675 1650 1500 900 900 +500 500	84,0-87,0	(7,5-17,5) (25,0-35,0) (82,5-88,5) (62,0-68,0) (80,5-86,5) (64,0-70,0) (54,2-61,8)	0,67 0,67 0,67 0,67 0 0,67 0,27	K KF MS SVS	3,2-3,4 5,7-5,9 1,4-1,6 max.6,0	
switch-off	1500	0			» XK » XL	20,1-22,1	
Idle stop End stop	380-480 300 180 240	0	(18,0-28,0)		Observations 24 V-Electromagnet  LDA-stroke 4,5 mm + Use adjusting nut (46) to correct.		
2.4 Solenoid	cut-in voltas	e xxx min	. 10,0V				

Testoil-ISO 4113

rated voitage 12 V

#### 6

## Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 FIA 1,7A1

1. Edition

1500

En

VE 4/9 F 2300 R 43 0 460 494 034

2. Test Specifications

2.1 Timing device

n = rev/min

Overflow temperature 45° C

supersedes Fiat company: X 8/28

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

see VDT-W-460/

Pre-stroke setting

**Festoil-ISO 4113** 

mm

1. Setting3	Rot speed rav/min	Settings	Charge-air press. bar (kgf/cm²)	Difference in delivers ama
1.1 Timing device travel	1500	4,3-4,7 mm		
1.2 Supply-pump pressure	1500	5,1-5,7 bar (kgf/c	cm²)	·
1.3 Full-load delivery with	1500	34,2-35,2 cm <sup>3</sup> /1000	) strokes	2,5(3,0)
charge-air pressure Full-load delivery without		cm <sup>3</sup> /1000	) strokes	
charge-air pressure	350	8,0-12,0 cm <sup>3/1000</sup>	O strokes	2,5(3,0)
1.5 Full-speed regulation	100	min. 48,0 cm <sup>3/1000</sup>	O strokes	
1.6 Start	2400	14,5-20,5 cm <sup>3/100</sup>	O strokes	
1.7 Load-dependent port-closing	1500			

checking values in brackets (

800

2.1 Timing device	n = rev/min	1,8-2,6(1,5	-2 9)	(3,8-5,2)	7.0-7	,8(6,7-8,1)
2.2 Supply pump	n = rev/min	400		(-)		2300 9-7,5
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	2,5-3,1 500 55-110(40-125)				2300 0(40-125)
2.3 Fuel deliveries Speed control lever	Rot. speed	Fuel delivery		Charge-air press.	3. Dimens	sions tor assembly and adjustment mm
End stop	2500 2400 2250 1500 600	2,0-8,0 28,0-30,0	(13,5-21,5) (26,7-31,3) (32,4-37,0) (22,0-28,0)		K KF MS SVS	3,2-3,4 5,7-5,9 1,7-1,9 max.3,5
switch-off	2300	0			XK XL	20,1-22,1
Idle stop	400-540 400 350	0 max. 4,0	(6,0-14,0)		Observations	
End stop	400					

C14

BOSCH

2.4 Solenoid

480

cut-in voltage

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min. 10.0 V

rated voltage 12 V.

WPP 001/4 VWW 2,3bl

1. Edition

En

VE 6/10 F 2400 L 32 0 460 406 003

Overflow temperature 45° C

supersedes VW company:

engine:

087/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

mm

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
,	1500	3,0-3,4	mm		
1.1 Timing device travel	1500	5,1-5,9	bar (kgf/cm²)		
1.2 Supply-pump pressure	1500	27,0-28,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.3 Full-load delivery with charge-air pressure			cm³/1000 strokes		
Full-load delivery without charge-air pressure	350	10,0-14,0	cm³/1000 strekes		2,5(3,0)
1.4 Idle regulation	100	min.45,0	cm <sup>3</sup> /1000 strokes		
1.5 Full-speed regulation	2600	15,5-21,5	cm³/1000 strokes		
1.6 Start					
1.7 Load-dependent port-closing					

2. Test Spec	atications	checking values in brai	ckets ( )			
1 Timing device	n = rev/min mm	1000	1,9)(2,5-3,9	500 9)4,5-5,3(4,	2000 2-5,6)5,4-6	
2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,7-3,5				2400 6,6-7,4 
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-1	25)			2400 0(40-125)
2.3 Fuel deliveries	19.4	Fuel delivery		Charge-air press.	3. Dimens	tor assembly and adjustment mm
Speed control lever	Rot. speed rev/min	cm <sup>3</sup> /1000 strokes		bar (kgf/cm²)		<u> </u>
End stop	2700	7,0-11,0	/44 E 22 E\		к	3,2-3,4
	2600 2400	23 5-25-5	(14,5-22,5)		KF	6,4-6,6
	1500	23,3-23,3	(14,5-22,5) (22,2-26,8) (25,2-29,8)		MS	1,4-1,6
	750	26,5-29,5	(25,0-21,0)		svs	max.3,0
					AX XK	18,5-20,
switch-off	2400	0			B <sub>X</sub> XL	9,2-12,
Idle stop	400 350	3,0-9,0	(8,0-16,0)		Observations	
End stop	400 500	min. 30,0 max. 30,0				
2.4 Solenoid	cut-in volt		10,0 V			

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2. Test Specifications checking values in brackets (

46

WPP 001/4 VWW 2,0c 1. Edition

En

VE 5/10 F 2400 L 35-6 (P Overflow temperature 45° C

supersedes company:

VWW Audi 100

0 460 405 027; 028

engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,14

 $mm \pm 0.02 (0.04)$ 

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	2,6-3,0	mm		
1.2 Supply-pump pressure	1400	5,0-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with	1400	33,5-34,5	cm <sup>3</sup> /1000 strokes	!	2,5(3,0)
charge-air pressure Full-load delivery without			cm <sup>3</sup> /1000 strokes		
charge-air pressure 1.4 Idle regulation	375	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.56,0	cm <sup>3</sup> /1000 strakes		
1.6 Start	2500	22,0-26,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2.1 Timing device	n = rev/min mm	1000 1,4-2,4(1,2-2,6)		1400 (2,1-3,5)		2400 9(4,8-6,2)
2.2 Supply pump	n = rev/miri bar (kgf/cm²)	500 2,8-3,4				2400 ,5-8,1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-	125)		55-110	2400 (40-125)
2.3 Fuel deliveries Speed control lever	Rot.speed	Fuel delivery		Charge-air press.	3. Dimens	ions for assembly and adjustment mm
End stop	2650 2500 2400 1400 750	7,0-11,0 28,0-31,0	(5,0-13,0) (20,0-28,0) (27,2-31,8) (31,7-36,3) (23,0-29,0)		K KF MS SVS	 5,7-5,9 1,7-1,9 max.3,0
switch-off	2400	0			≯ XK	18,5-20,5 9,0-12,5
idle stop	500 375	max.3,0	(4,0-12,0)		Observations Mechanical	Stop control
End stop	400 500	min. 23,0 max. 23,0				
2.4 Solenoid	cut-in volta	ge min. rated volt	10,0 V age 12V			

Testoil-ISO 4113

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46

WPP 001/4 REN 2,0c

1. Edition

En

VE 4/9 F 1500 R 68 O 460 494 054

Overflow temperature 45° C

supersedes

company: Renault 4130 RMC

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/

Pre-stroke setting

-- mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	1,7-2,1	mm		
1.1 (Iming device traver	1500	6,1-6,7	bar (kgf/cm²)		
1.2 Supply-pump pressure	1500	34,7-35,7	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm <sup>3</sup> /1000 strokes		
charge-air pressure	350	8,0-12,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.40,0	cm³/1000 strokes		
1 6 Start	1600	15,0-21,0	cm <sup>3</sup> /1000 strokes		
1.7.Load-dependent port-closing					

2. Test Sp€	effications	checking values in brackets ( )	
2.1 Timing device	n = rev/min	1200	1500
	mm	0,8-1,6(0,5-1,9)	(1,2-2,6)
2.2 Supply pump	n = rev/min	600	1200
	bar (kgf/cm²)	3,9-4,5	5,4-6,0
Overflow delivery	n = rev/min	500	1500
	cm <sup>3</sup> /10 s	55-110(40-125)	55-110(40-125)
			2 Dimensions

	<u> </u>			
2.3 Fuel delivenes				
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1700-1770 1600 1500 1000 600	0 28,7-31,7 23,2-27,2	(14,0-22,0) (32,9-37,5) (27,9-32,5) (22,2-28,2)	)
switch-off	1500	0		
Idle stop	400 <b>-</b> 460 350	0	(6,0-14,0)	
End stop	360 460			
2.4 Solenoid	cut-in voltag		. 10,0 V voltage 12V	1

BOSCH

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WPP 001/4 VWW 1,6i

1500

(3,5-4,9)

1. Edition

En

VE 4/9F 2250 R 78-1 (P) Overflow temperature 45° C

supersedes

VWW

0 460 404 098; 099

company: engine:

086T-1,6-Autom.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

**Test Instructions and Test Equipment** 

Pre-stroke setting

2.1 Timing device

2.2 Supply pump

2. Test Specifications checking values in brackets (

n = rev/min

n = rev/min

520

cut-in voltage

mm

see VDT-W-460/...

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,0-4,4	mm	0,75	
1.2 Supply-pump pressure	1500	5,5-6,1	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	600	23,5-24,5	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1500	43,5-44,5	cm³/1000 stroķes	0,75	
1.4 Idle regulation	475	7,0-11,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm <sup>3</sup> /1000 strokes	0	
1.6 Start	2525	9,0-15,0	cm <sup>3</sup> /1000 strokes	0,75	
1.7 Load-dependent port-closing					

с. с очррту ратер	bar (kgf/cm²)	3,3-3,9	)	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55.110(40-	125)	
2 3 Fuel deliveries			<del></del>	
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2730-2870 2525 2250 1500 +1000 600	0 38,5-40,5 33,5-34,5	(8,0-16,0) (37,2-41,8) (41,7-46,3) (31,7-36,3) (21,0-27,0)	0,75 0,75 0,75 0,75 0,3 0
switch-off	2250	0		u
idle stop	1200 475	max. 10,0	(5,0-13,0)	0
End stop	440			

1000

1600

1,9-2,7(1,6-3,0)

3. Dimen	Sions for assembly
Designation	and adjustment
к	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.4,4
*	18,4-20,4
<b>%</b>	10,4-12,7
Observations	
+ Use ad	roke 4,0 mm ljusting nut o correct.

2250

2250

2250

7,4-8,0

6,2-7,0(5,9-7,3)

**BOSCH** 

2.4 Solenoid

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung.

1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Atlemagne par Robert Bosch GmbH.

min. 10,0 V

rated voltage 12V

46

WPP 001/4 PEU 2,3 f

1. Edition

VE 4/10 F 2125 R 67-1

0 460 404 020

Overflow temperature 45° C

supersedes

company Peugeot

engine: XD 25 - US 81

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

**Test Instructions and Test Equipment** 

re-stroke setting

2. Test Specifications

n = rev/min

n = rev/min

cut-in voltage

2.1 Timing device

2.2 Supply pump

see VDT-W-460/

1500

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Contraction of the last of the
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rre-stroke setting mm			308 AD 1-44-4001		
1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	5,0-5,4	mm	0,8	
1.2 Supply-pump pressure	1500	5,4-6,0	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with	600	36,0-39,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
charge-air pressure Full-load delivery without	1125	48,7-49,7	cm³/1000 strokes	0,8	
charge-air pressure 1.4 Idle regulation	390	8,0-12,0	cm³/1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.53,0	cm <sup>3</sup> /1000 strokes	0	
1.6 Start	2450	9,5-15,5	cm <sup>3</sup> /1000 strokes	0,8	
1.7 Load-dependent port-closing					

1000

1,3-2,1(1,0-2,4)2,9-3,5(2,5-3,9)(4,5-5,9)6,9-7,7(6,6-8,0)

2.2 Supply pump	bar (kgf/cm²)	1,6-2,2			
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-	125)		_
2.3 Fuel deliveries			· · · · · · · · · · · · · · · · · · ·		
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	,
End stop	2500 2450 2350 2050 1400 1125 +750 600		(7,5-16,5) (23,0-31,0) (43,2-47,8) (49,5-54,1) (46,9-51,5) (39,8-45,8) (34,5-40,5)	0,8 0,8 0,8 0,8 0,25	
switch-off	2125	0			
idle stop	450-550 390	0	(6,0-14,0)		
End stop	400 500				

checking values in brackets (

600

400

3. Dimen	for assembly
Designation	and adjustment mm
к	3,2-3,4
KF	5,7-5,9
MS	0,9-1,1
svs	max.1,2
x XK	20,0-22,2
B XL	8,8-12,2
Observations	

LDA-stroke 4,5 mm + Use adjusting nut (46) to correct.

2075

7,6-8,2

2125 55-110(40-125)

BOSCH

2.4 Solenoid

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min. 10,0 V

rated voltage 12V

WPP 001/4 VWW 1,6v2

1. Edition

VE 4/9 F 1500 R 85-3 0 460 494 108

Overflow temperature 45° C

supersedes '

company: VWW

engine:

50 Hz units

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/.

Pre-stroke setting

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>2</sup>
1.1 Timing device travel	1480	3,1-3,5	mm		
1.2 Supply-pump pressure	1480	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with	1480	32,5-33,5	crn³/1000 strokes		2,5(3,0)
charge-air pressure .Full-load delivery without			cm <sup>3</sup> /1000 strokes		
charge-air pressure 1.4 Idle regulation	425	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm³/1000 strokes		
1.6 Start	1550	12,0-18,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	ecifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)		1480 (2,6-4,0)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,3-2,9		
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		1500 55-110(40-125)
2.3 Fuel deliveries			- Charge our proof	3. Dimensions tor assembly and adjustment

2.3 Fuel deliveries		<u> </u>			3. Dimens	tor assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	1600-1650 1550 1480 600	0 21,0-24,0	(11,0-19,0) (30,7-35,3) (19,5-25,5)		k kf ms svs +FH	3,2-3,4 5,7-5,9 1,2-1,4 max.2,5 1,8-2,4
switch-off	1500	0			xx XK xx XL	18,4-20,4 10,2-13,5
End stop	560-700 425 400 500	0	(4,0-12,0)		Observations + Operations (cold-s	ing stroke start accel.)
2.4 Solenoid	cut-in voltag	311 1 1 1 •	10,0 V oltage 12V			

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

estoil-ISO 4113

46

WPP 001/4 FIA 4,6a

1. Edition

En

VE 5/11 F 1250 R 58 0 460 415 001 Overflow temperature 45° C

supersedes Fiat

company: engine: 8055.04.200

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

**Test Instructions and Test Equipment** 

see VDT-W-460/...

Pre-stroke setting

0,2

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	900	4,8-5,2	mm		
1.2 Supply-pump pressure	900	4,5-5,1	bar (kgf/cm²)		
1 3 Full-load delivery with	900	65,0-66,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 strokes		
charge-air pressure	350	11,5-15,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 70,0	cm³/1000 strokes		
1.6 Start	1330	23,0-29,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. 1 <b>68%</b> Spe	cifications	checking values in brackets (	)	4400
2.1 Timing device	n = rev/min	400 1,1-1,9(0,8-2,2)	900 (4,3-5,7)	1100 6,4-7,2(6,1-6,5)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,7-3,3		1250 5,7-6,3
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		1250 55-110(40-125)
2.3 Fuel deliveries				3. Dimensions tor assembly and adjustment

	C111-710-5	· ·	
2.3 Fuel deliveries			
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1370-1420 1330 1300 1230 900 500	0 (21,5-30,5) 35,0-41,0 (33,5-42,5) 62,0-65,0 (60,8-66,2) (62,8-68,2) 53,75-57,25 (52,1-58,9)	
switch-off	1250	0	
Idle stop  End stop	430-500 350 150 250	0 11,5-15,5	
2.4 Solengid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimen	tor assembly
Designation	and adjustment mm
к	
KF	5,4-5,6
MS	1,5-1,7
svs	max.6,0
+FH	1,8-2,4
¥ XK	25,0-27,0
¥ XL	10,8-14,1

#### Observations

+ operating stroke
 (cold-start accel.)

**BOSCH** 

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Festoil-ISO 41

WPP 001/4 PEU 2.3h 1. Edition

1400

En

VE 4/10 F 2075 R 40 0 460 404 003

Overflow temperature 45° C

Peugeot company: XD 2 S engine

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

2.1 Timing device

mm

2. Test Specifications checking values in brackets (

n = rev/min

1098-W-T-W-460/

2000

Maß K 1

5,7-5,9

0,9-1,1

max.5,3

20,1-22,1

10,5-14,3

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	5,0-5,4	mm	0,67	
1.2 Supply-pump pressure	1400	5,1-5,7	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with	500	35,0-36,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
charge-air pressure Full-load delivery without	1000	47,3-49,7	cm <sup>3</sup> /1000 strokes	0,67	
charge-air pressure 1.4 Idle regulation	375	8,0-12,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.70,0	cm <sup>3</sup> /1000 strokes	0	
1.6 Start	2375	20,0-26,0	cm <sup>3</sup> /1000 strokes	0,67	
1.7 Load-dependent port-closing	1400				

#### 7,7-8,5(7,4-8,8) 1,0-1,8(0,7-2,1) (4,5-5,9)LDA=0.67bar mm 2075 2.2 Supply pump 400 n = rev/min 6,5-7,1bar (kgt/cm²) 2,4-3,0 LDA=,67bar 2075 500 Overflow delivery n = rev/min 55-110(40-125) 55-110(40-125) cm3/10 s 3. Dimensions for assembly and adjustment 2.3 Fuel deliveries Designation Charge-air press bar (kgf/cm²) Fuel delivery cm<sup>3</sup>/1000 strokes Rot. speed rev/min Speed control lever End stop (5,0-13,0)2500 6,0-12,00,67 (19,0-27,0) 0,67 2375 43,8-46,2 (42,7-47,3)0,67 2000 (45,5-50,1)47,3-48,3 0,67 1750 MS 46,2-50,8) 1000 0,67 SVS 41,5-42,5 (39,0-45,0)0,25 +750 35.0-36.0 (32.5 - 38.5)500 x XK switch-off 0 2075 X XL Observations idle stop 400-470 0 LDA-stroke 4,5 mm (6,0-14,0)375 0 + Use adjusting nut (46) to correct. End stop 430 480 min. 10,0 V 2.4 Splenoid cut-in voltage rated voltage 12V

Testoil-ISO 4113

# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VMA 2,2a

1. Edition

VE 4/10 F 2100 L 75

Overflow temperature 45° C

supersedes VM-Motori company: HR 492 HT

0 460 404 024

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1900	8,2-8,6	mm	0,7	
1.2 Supply-pump pressure	1900	6,8-7,4	bar (kgf/cm²)	0,7	
1.3 Full-load delivery with	600	32,0-35,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
charge-air pressure Full-load delivery without	1600	49,0-50,0	cm³/1000 strokes	0,7	
charge-air pressure 1.4 Idle regulation	400	15,0-19,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min. 65,0	cm <sup>3</sup> /1000 strokes	-	
1.6 Start	2100	43,0-46,0	cm <sup>3</sup> /1000 strokes	0,7	
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in br	ackets ( )			
2.1 Timing device LDA=0,7bar	n = rev/min mm	1000 2,0-2,8(1,7	1000 2,0-2,8(1,7-3,1)			2100 ,0(9,0-10,4)
2.2 Supply pump LDA=0,7 bar	n = rev/min bar (kgf/cm²)	400 1,5-2,1			2100 7,5-8,1	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-1	500 55-110(40-125)		2100 55-110(40-125)	
2.3 Fuel deliveries					3. Dimer	ISIONS for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	2450 2300 2100	max. 5,0 24,5-30,5	(23,5-31,5)		K	3,2-3,4

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	
End stop	2450 2300 2100 1600 1600 +700 600	31,0-34,0	(23,5-31,5) (42,2-46,8) (30,3-34,8) (47,2-51,8) (39,5-45,5) (30,5-36,5)	0,7 0 0,7 0,3	
switch-off	2100	0			
Idle stop End stop	550-750 400 400 500	0	(13,0-21,0)		
2.4 Salenoid	cut-in voltage	cutin voltage min. 10,0V			

Designation	for assembly and adjustment mm
K	3,2-3,4 5,7-5,9
MS SVS	1,4-1,6
+FH X	1,8-2,4 20,2-22,2 10,0-13,3
28	10,0-13,3

#### Observations

LDA-stroke 4,5 mm + Use adjusting nut (46) to correct.

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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6

Testoil-ISO 4113

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VMA 2,0a

1. Edition

En

VE 4,) F 2150 L 31

Overflow temperature 45° C

supersedes =

1900

company: VM-Motori engine: HR 488 HT

0 460 494 016

2.1 Timing device

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

2. Test Specifications checking values in brackets (

1000

Test Instructions and Test Equipment

2150

see VDT-W-460/...

Pre-stroke setting	mm			266 AD1-41-400/	
1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1900	6,5-6,9	mm	0,7	
1 2 Supply-pump pressure	1900	5,7-6,3	bar (kgf/cm²)	0,7	
1 3 Full-load delivery with	600	30,5-33,5	cm³/1000 strokes	0	2,5(3,0)
charge-air pressure Full-load delivery without	1600	46,5-47,5	cm³/1000 strokes	0,7	
charge-air pressure 1 4 Idle regulation	400	8,0-12,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.55,0	cm <sup>3</sup> /1000 strokes	0	
1 6 Start	2300	27,5-33,5	cm <sup>3</sup> /1000 strokes	0,7	
1.7 Load-dependent port-closing					

E. F. SHITHING GOVICE	mm	1,5-2,3(1,2	-2,6)	(6,0-7,4)	7 <b>,</b> 5 <b>-</b> 8	,3(7,2-8,6)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,0-2,6				150 -6,9
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	300			55.11	150 0(40-125)
2.3 Fuel deliveries  Speed control lever	Rot. speed	Fuel delivery		Charge-air press.	3. Dirner Designation	ons for assembly and adjustment mm
End stop  switch-off	2500-2650 2450 2300 2150 1600 1600 +600 600	0 max.10,0 40,0-43,0	(26,5-34,5) (39,2-43,8) (32,7-37,3) (44,7-49,3) (36,8-42,8) (29,0-35,0)	0,7 0 0,7 0,27	K KF MS SVS	3,2-3,4 5,7-5,9 1,4-1,6 max.6,0
End Stop	800 500 400 400 500	0 max. 6,0 (6,0-14,0)		0 0 0	+ Use a	troke 3,8 mm djusting nut to correct.
2.4 Solenoid	cut-in voltag	111111	. 10,0 V			

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fedérale d'Allemagne par Robert Bosch GmbH.

46

WPP 001/4 VWW 1,6 v 1

1. Edition

En

VE 4/9 2000 R 85 0 460 494 086 Overflow temperature 45° C

supersedes

company: VWW

engine:

Industrie-Motor

065.5

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

**Test Instructions and Test Equipment** 

Pre-stroke setting

- mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,1-3,5	mm		
1.2 Supply-pump pressure	1500	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	32,5-33,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure			cm³/1000 stroķes		
1.4 Idle regulation	425	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 35,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2050	9,0-15,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in brackets (	)		
2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 )(2,6-4,0)4,	1800 2-4,8(3,8-5,2	2000 2)4,7-5,5(4,4-5,8)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,1-2,7	1500 4,9-5,5		2000 6,1-6,7
Overflow delivery	n = rev/min cm³/10 s	500 55-110(40-125)			2000 55-110(40-125)

· · · · · · · · · · · · · · · · · · ·	<del></del>	<u> </u>			
2.3 Fuel deliveries					
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	
End stop	2070 2050 2010-2020 2000 1980 1500 600	29,0-31,0	(8,0-16,0) (27,7-32,3) (27,7-32,3) (30,7-35,3) (19,5-25,5)		
switch-off	2000	0		·	
Idle stop End stop	700 600 425 400 500	0 max. 2,0	(4,0-12,C)		
2.4 Solenoid	cut-in voltage min. 10,0 V rated voltage 12V				

K 3,2-3,4 KF 5,7-5,9 MS 1,2-1,4 svs max.2,5 +FH 1,8-2,4	3. Dimens	ions for assembly and adjustment mm
AX XK 18,4-20,4 BX XL 13,6-17,0	KF MS SVS +FH AX XK	5,7-5,9 1,2-1,4 max.2,5 1,8-2,4 18,4-20,4

#### Observations

+operating stroke
 (cold-start accel.)

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung.

1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en Republique Fedérale d'Allemagne par Robert Bosch GmbH.

Testoil-ISO 4113

#### Test Specifications Distributor-type Fuel-injection Pumps

40

WPP 001/4 PEU 2,3 d 1. Edition

En

VE 4/9 F 2250 R 50 O 460 494 041 Overflow temperature 45° C

supersedes =

company: Peugeot angine: XD2 USA

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
, 1.1 Timing device travel	1600	3,4-3,8	mm		
1.2 Supply-pump pressure	1600	5,4-6,0	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1400	39,0-40,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure  1.4 Idle regulation	400	10,0-14,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.50,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2350	23,0-29,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing		<b></b>			

2. Test Spe	cifications	checking values in t	orackets (			
2.1 Timing device	n = rev/min mm	900 0,3-1,1 (0-1,4)	1200 1,8-2,4 (1,4-2,8)	1600 2,9-4,3	2000 5,0-5,8 (4,7-6,1)	2200 (6,0-6,8 (5,7-7,1)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 1,1-1,7				2250 7,9-8,5
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-	125)			2250 55-110(40 <b>-</b> 125)
2.3 Fuel deliveries					3. Dime	ensions

2.3 Fuel deliveries				
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2500 2450 2350 2200 2000 1400 900 600	34,8-37,2 36,5-38,5 32,5-35,5	(5,5-13,5) (22,0-30,0) (33,7-38,3) (35,2-39,8) (37,2-41,8) (31,7-36,3) (30,0-36,0)	
switch-off	2250	0		
idie stop End stop	440-600 400 465 515	0	(8,0-16,0)	
2.4 Solenoid	cut-in voltage		10,0 V voltage 12V	

Designation	tor assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
svs	max.3,2
x XK	20,2-22,2 15,8-19,8
Observations	

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6

#### **Test Specifications** Distributor-type **Fuel-injection Pumps**

WPP 001/4 VWW 1,6V 1. Edition

VE 4/9 F 2000 R 86 0 460 494 088

Overflow temperature 45° C

supersedes VWW

company:

engine:

086-1.6 Bell

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

mm

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,1-3,5 mm		
1.2 Supply-pump pressure	1500	4,9-5,5 bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	33,5-34,5 cm <sup>3</sup> /1000 strokes	ł	2,5(3,0)
Full-load delivery without charge-air pressure 1.4 Idle regulation	350	5,0-9,0 cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0 cm <sup>3</sup> /1000 strokes		
1.6 Start	2100	22,0-26,0 cm <sup>3/1000</sup> strokes		
1.7 Load-dependent port-closing				

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (2,6-4,0)	2000 4,7-5,5(4,4-5,8)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,3-2,7		2000 6,0-6,6
Overflow delivery	n = rev/min cm³/10 s	500 55-110(40-125)		2000 55-110(40-125)
0.05		<del></del>	3	Dimensions

2.3 Fuel deliveries			
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2200 2100 2000 1500 600	1,0-7,0 (0,0-8,0) (20,0-28) 26,7-29,3 (25,7-30) (31,7-36) 22,5-25,5 (21,0-27)	,0) ,3)
switch-off	2000	0	
idle stop	400-480 350	0 (3,0-11,0	0)
End stop	400 500	min. 24,0 max. 26,0	
2.4 Solenoid	cut-in voltage min. 10,0 V rated voltage 12V		

3. Dimensions				
Designation	and adjustment mm			
к	3,2-3,4			
KF	5,7-5,9			
MS	1,2-1,4			
svs	max.2,5			
+FH	1,8-2,4			
A XK				
₿ XL				
Observations	<u> </u>			
+ operating stroke (cold-start accel.)				

WPP 001/4 MAN 3,7c 1 1. Edition

#### En

oil-ISO 4113

VE 4/10 F 1500 R 57

Overflow temperature 45° C

supersede MAN company: D 0224 MF

0 460 404 010

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers 0,2

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting mr

1. Settings	Rot. speed rev/min	Ŝettings	Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,3-5,7 <sub>mm</sub>		
1.2 Supply-pump pressure	1000	5,5-6,1 bar (kgf/cm²)		
1.3 Full-load delivery with	1000	61,5-62,5 cm <sup>3</sup> /1000 strok	es	2,5(3,5)
charge-air pressure Full-load delivery without		cm <sup>3</sup> /1000 strok	es	
charge-air pressure	350	10,0-14,0 cm <sup>3</sup> /1000 strok	es	2,5(3,5)
1.5 Full-speed regulation	100	min. 60,0 cm <sup>3</sup> /1000 strok	es	
1.6 Start	1650	4,0-10,0 cm <sup>3</sup> /1000 strok	es	
1.7 Load-dependent port-closing				

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min	600 2,6-3,4(2,3-3,7)	1000 (4,8-6,2)	1400 7,8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 3,6-4,2		1400 7,0-7,6
Overflow delivery	n = rev/min cm³/10 s	500 55-110(40-125)		1500 55-110(40-125)
				Dimensions

2.3 Fuel deliveries				
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1680-1740 1650 1550 1480 1000 600	0 max.60,0 68,5-71,5 57,25-60,7	(2,5-11,5) (67,3-72,7) (59,3-64,7) (5(55,6-62,4)	
switch-off	1500	0		
Idle stop	400-450 350	0	(7,5-16,5)	
End stop	400 470			
2.4 Solenoid	cut-in voltage		.20,0 V ltage 12V	

3. Dimens	ions for assembly and adjustment
Designation	mm
К	
KF	5,7-5,9
MS	1,1-1,3
svs	max.4,0
XK St.	25,0-27,0 12,2-15,5
Observations	11,12,10,10

estoil-ISO 4113

# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1,6v4

1. Edition

En

VE 4/9 F 1800 R 85-1

0 460 494 107

Overflow temperature 45° C

supersedes

company: VWW engine: 638/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

\_\_ mn

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,1-3,5	mm		
1.2 Supply-pump pressure	1500	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	32,5-33,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure			cm <sup>3</sup> /1000 strokes		
1.4 Idle regulation	425	6,0-10,0	cm <sup>3</sup> /1000 strokes	1	2,5(3,0)
1.5 Full-speed regulation	100	min. 35,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	1870	9,0-15,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in brackets (	)		
2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (2,6-4,0		80 6(3,5-4,9)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,3-2,9		17 5,5-6	80
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)			00 (40-125)
2.3 Fuel deliveries Speed control lever	Rot. speed	Fuel delivery	Charge-air press.	3. Dimens	sions for assembly and adjustment mm
End stop	1920-1970 1870 1780 1500 600	0 (8,0-16,0) 29,9-31,9(28,6-33,2) (30,7-35,3) 21,0-24,0(19,5-25,5)		K KF MS SVS +FH	3,2-3,4 5,7-5,9 1,2-1,4 max.2,5 1,8-2,4
switch-off	1800	0		AX XK BX XL	18,4-20,4 9,7-13,1
Idle stop  End stop	560-700 425 400 500	0 (4,0-12,0)			ing stroke tart accel.
2.4 Solenoid	cut-in voltage	min. 10,0 V			

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rated voltage 12V

# Testoil-ISO 4113

## **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 REN 2,0b

1. Edition

En

VE 4/9 F 2250 R 41 0 460 494 027

Overflow temperature 45° C

supersedes Renault company: 852

engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers mm

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	4,6-5,0	mm		
1.2 Supply-pump pressure	1400	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with	1400	40,0-41,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 stroķes		
charge-air pressure 1.4 Idle regulation	350	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.52,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2400	17,0-23,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	ecifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	1000 2,8-3,6(2,5-3,9)	1400 (4,1-5,5)	2000 6,8-7,6(6,5 <b>-</b> 7,9)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	1000 3,9-4,5		2000 6,5-7,1
Overflow delivery	n = rev/min	500		2250
	cm³/10 s	55-110(40-125)		55-110(40-125)
2.3 Fuel deliveries				3. Dimensions

2.3 Fuel deliveries				
Speed control lever	Rot speed resmin	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2630-2700 2400 2200 2100 1400 1000	33,5-35,5	(16,0-24,0) (31,6-36,2) (32,2-36,8) (38,2-42,8) (34,8-38,4)	
switch-off	2250	0		
idle stop  End stop	400-460 350 420	0	(4,0-12,0)	
2.4 Solenoid	480	e min. 10,0 V rated voltage 12V		

Designation	and adjustment
к	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
svs	max.3,5
AK XK	20,1-22,1
X AL	9,5-13,3
Observations	

**BOSCH** 26

#### 6

#### Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 PEU 2,3e

1. Edition

En

VE 4/10 F 2075 R 67 0 460 404 012 Overflow temperature 45° C

supersedes 7

company: Peugeot engine: XD 2 S - US

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT·W-460/...

Pre-stroke setting

mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. ber (kgi/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	5,0-5,4	mm	0,8	
1.2 Supply-pump pressure	1500	5,4-6,0	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with	600	36,0-39,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
charge-air pressure Full-load delivery without	1125	48,7-49,7	cm <sup>3</sup> /1000 strokes	0,8	
charge-air pressure 1.4 Idle regulation	390	8,0-12,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.53,0	cm <sup>3</sup> /1000 strokes	0	
1.6 Start	2400	9,5-15,5	cm <sup>3</sup> /1000 strokes	0,8	
1.7 Load-dependent port-closing					

2. Test Spe	ecifications	checking values in brackets (	)		
2.1 Timing device	n = rev/min mm	600 1,3-2,1(1,0-2,4)2	1000 ,9-3,5(2,5-3,9	1500 2000 9)(4,5-5,9)6,9-7,7(6,6-8	3,0)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 1,6-2,2		2075	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		2075 55-110(40-12	25)

2.3 Fuel deliveries				
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2450 2400 2300 2000 1400 1125 +750 600	44,3-46,7 50,6-53,0 42,3-43,3	(7,5-16,5) (24,5-32,5) (43,2-47,8) (49,5-54,1) (46,9-51,5) (39,8-45,8) (34,5-40,5)	0,8 0,8 0,8 0,8 0,8 0,8 0,25
switch-off	2075	0		
Idle stop  End stop	450-550 390 400 500	0	(6,0-14,0)	
2.4 Solenoid	cut-in voltage		10,0 V 1tage 12V	

Designation	tor assembly and adjustment mm
к	3,2-3,4
KF	5,7-5,9
MS	0,9-1,1
svs	max.1,4
ax XK	20,2-22,2
ex XL	8,8-12,2

3 Dimensions

#### Observations

LDA-stroke 4,5 mm + Use adjusting nut (46) to correct.

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**Testoil-ISO 4113** 

# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 BUK 1,5b

1. Edition

En

VE 3/10 F 1800 L 33-1 0 460 403 002

Overflow temperature 45° C

supersedes Bukh company: **DU 36 ME** 

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

0,2

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1600	4,3-4,7	mm		
•	1600	6,4-7,0	bar (kgf/cm²)		
1.2 Supply-pump pressure  1.3 Full-load delivery with	1600	37,5-38,5	cm <sup>3</sup> /1000 strokes	! !	2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 strokes		
charge-air pressure	500	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.38,0	cm³/1000 strokes		
1.6 Start	1850	17,0-23,0	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in brackets ( )		
2.1 Timing device	n = rev/min	1000 1,0-1,8(0,7-2,1)	1600 (3,8-5,2)	1800 5,2-6,0(4,9-6,3)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 1,7-2,3		1800 7,2-7,8
Overflow delivery	n = rev/min cm³/10 s	500 55-110(40-125)		1800 55-110(40-125)

	1			
2.3 Fuel deliveries				
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	<u></u>	Charge-air press. bar (kgf/cm²)
End stop	1930-2000 1900 1850 1750 1600 1000 600	39,0-42,0	(16,0-24,0) (33,7-38,3) (35,7-40,3) (38,2-42,8) (30,5-36,5)	
switch-off	1800	0		
Idle stop	530-600 500	0	(4,0-12,0)	
End stop	470 570			
2.4 Selenoid	cut-in voltage	min.	10,0 V oltage 12V	

3. Dimensions tor assembly and adjustment Designation							
K							
KF	5,9-6,1						
MS	0,9-1,1						
svs	max.4,2						
x XK	20,2-22,2						
B <sub>X</sub> XL	12,2-15,5						
Observations							

pushing electronagnet

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**Festoil-ISO 4113** 

## **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6b 1. Edition

En

VE 4/9 F 2400 R 66-Z 0 460 494 050

Overflow temperature 45° C

supersedes VWW company: Rabbit

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

mm

2. Test Specifications checking values in brackets (

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,0-2,4	mm		
1.2 Supply-pump pressure	1500	5,0-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with	1500	30,0-31,0	cm³/1600 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 stroķes	<u> </u>	
charge-air pressure 1.4 Idle regulation	415	6,5-10,5	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2600	11,0-17,0	cm <sup>3</sup> /1000 strokes		
1 7 Load-dependent port-closing					

2. 1631 Spei	Alleations	Checking values in D	TECHTIS (			
2.1 Timing device	n = rev/min mm	1500 (1,5-2,		2000 3-4,9(3,9-5	,3) 6,0-7,0	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 1,1-1,			240 7,5-8	· ·
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(4			240 55-110(4	
2.3 Fuel deliveries					3. Dimens	tor assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	2700 2600 2400 1500 600		(2,0-10,0) (10,0-18,0) (24,9-29,5) (28,2-32,8) (16,0-22,0)		K KF MS SVS	3,2-3,4 5,7-5,9 1,3-1,5 max.4,0 1,8-2,4
switch-off	2400	0			A× XK B× XK	18,4-20,4 9,1-12,9
Idle stop  End stop	1200 600 415 400 500	max.3,0 max.6,0	(4,5-12,5)		observations + operating stroke (cold-start acce	
2.4 Solenoid	cut-in volta	ge .				

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WPP 001/4 VWW 1,6L

1. Edition

En

VE 4/9 F 2400 R 66-12 (P)

0 460 494 082; 0,83

supersedes

company: engine: VWW Rabbit Autom.

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

-- m

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,1-3,5	mm		
1.2 Supply-pump pressure	1500	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with	1500	30,0-31,0	cm <sup>3</sup> /1900 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 stroķes		
charge-air pressure 1.4 Idle regulation	415	6,5-10,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2600	11,0-17,0	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spec	cifications	checking values in br	ackets ( )			
2.1 Timing device	n = rev/min mm	1000	1-2,5)	155 (2,6-4,0)	2400 6,1-6,9(5,8-7,	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,1-2	<b>,</b> 7		_	400 0-7,6
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-	125)		55-110(	400 40-125)
2.3 Fuel deliveries  Speed control lever	Rot. speed	Fuel delivery		Charge-air press.	3. Dimens	sions tor assembly and adjustment mm
End stop	2700 2600 2400 1500 600	25,9-28,5	(2,0-10,0) (10,0-18,0) (24,9-29,5) (28,5-32,8) (16,0-22,0)		K KF MS SVS	3,2-3,4 5,7-5,9 1,2-1,4 4,4
switch-off	2400	0			<sub>A</sub> X XK B <sub>X</sub> XL	18,4-20,4
idle stop  End stop	1200 600 415 400 500	max. 5,0 max. 6,0 min. 30,0 max. 30,0	(4,5-12,5)		+ Use ad,	roke 4,0 mm justing nut o correct.
2.4 Solenoid	cut-in voltag		10,0 V tage 12V			

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## **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6d 1. Edition

VE 4/9 F 2400 R 66-8 0 460 494 077

supersedes ....VWW

engine: 1,61 Rabbit

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

 $\boldsymbol{m}\boldsymbol{m}$ 

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,1-3,5	mm		
1.2 Supply-pump pressure	1500	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with	1500	30,0-31,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 stroķes	!	
charge-air pressure 1.4 Idle regulation	415	6,5-10,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2600	11,0-17,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in b	rackets ( )			
2.1 Timing device	n = rev/min mm	1000	1-2,5)	1500 (2,6-4,0)	240 6,1-6,9	)0 (5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,1-2,	7		240 7,0-7	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-	125)		240 55-110(4	
2.3 Fuel deliveries Speed control lever	Rot. speed	Fuel delivery		Charge-air press.	3. Dimens	for assembly and adjustment mm
End stop	2700 2600 2400 1500 600		(2,0-10,0) (10,0-18,0) (24,9-29,5) (28,2-32,8) (16,0-22,0)	bar (kgf/cm²)	K KF MS SVS +FH	3,2-3,4 5,7-5,9 1,3-1,5 max.3,2 1,8-2,4
switch-off	2400	0			X Š	18,4-20,4 10,5-13,8
Idle stop	1200 600 415	max. 3,0 max. 6,0	(4,5-12,5)			ng stroke tart accel.)
End stop	400 500					
2.4 Solenoid	cut-in voltag	rated volta	10,0 V ge 12V			

BOSCH

WPP 001/4 VWW 1,6a Edition

VE 4/9 F 2400 R 66-3 R 66-7

supersedes company: engine:

0 460 494 052 0 460 494 075

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,1-3,5 mm		
1.2 Supply-pump pressure	1500	4,9-5,5 bar (kgf/cm²)		
1.3 Full-load delivery with	1500	33,0~34,0 cm³/1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without		cm <sup>3</sup> /1000 strokes		
charge-air pressure 1.4 Idle regulation	475	5,0-11,0 cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0 cm <sup>3</sup> /1000 strokes		
1.6 Start	2600	11,0-17,0 cm <sup>3/1000</sup> strokes		
1.7 Load-dependent port-closing				

2. Test Spec	affications	checking values in b	rackets ( )			
2.1 Timing device	n = rev/min mm	1,4-2,2(1	_	1500 (2,6-4,0)	6,1-6	2400 5,9(5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm²)		400 2,1-2,7		2400 7,0-7,6	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40			55-	2400 110(40-125)
2.3 Fuel deliveries Speed control lever	Rot. speed	Fuel delivery		Charge-air press.	3. Dimen	sions for assembly and adjustment mm
End stop  switch-off	2700 2600 2400 1500 600	27,7-30,3	(2,0-10,0) (10,0-18,0) (26,7-31,3) (31,2-35,8) (20,0-26,0)		K KF MS SVS +FH	3,2-3,4 5,7-5,9 1,3-1,5 max.2,5 1,8-2,4 18,4-20,4
Switch on	2400	0			₹ XL	9,1-12,9
End stop	1200 650 475 400 500	max. 3,0 max. 5,0 5,0-11,0 min.20,0 max.21,0	(4,0-12,0)			ing stroke start accel.)
2.4 Solenoid	cut-in volta		10,0 V 1tage 12V			

**BOSCH** 

Testoil-ISO 4113

WPP 001/4 VWW 1,6k

1. Edition

En

VE 4/9 F 2250 R 79 R 79 P supersedes company VWW engine: 086-T-1,6

0 460 494 064 0 460 494 065

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

- m

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,0-4,4	mm	0,75	
1.2 Supply-pump pressure	1500	5,5-6,1	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with	600	23,5-24,5	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
charge-air pressure Full-load delivery without	1500	43,5-44,5	cm³/1000 stroķes	0,75	
charge-air pressure	475	7,0-11,0	cm³/1000 strokas	0	2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm <sup>3</sup> /1000 strokes	0	
1.6 Start	2525	9,0-15,0	cm <sup>3</sup> /1000 strokes	0,75	
1.7 Load-dependent port-closing					

2. Test Spec	cifications	checking values in brai	ckets (		-	
2.1 Timing device	n = rev/min mm	1000 1,9-2,7(1,6-		1500 (3,5-4,9)	2250 6,2 <b>-</b> 7,0(	5,9-7,3)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 3,3-3,9		2250 7,4-8,0		
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-1	25)		2250 55-110(4	
2.3 Fuel deliveries					3. Dimen	Sions for assembly and adjustment
Speed control lever	Rot. speed	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	2730-2870 2525 2250 1500 +1000 600	0 38,5-40,5 33,5-34,5	(8,0-16,0) (37,2-41,8 (41,7-46,3 (31,7-36,3 (21,0-27,0	1 075	K KF MS SVS	3,2-3,4 5,7-5,9 1,2-1,4 4,4
switch-off	2250	0			ጵ XK ፄ XL	18,4-20,4 10,0-13,6
Idle stop  End stop	1200 475 440 520	max. 5,0	(5,0-13,0)		+ Use a	troke 4,0 mm djusting nut to correct.
2.4 Solenoid	cut-in voltag	e min. rated volt	10,0 V			

**√**D13

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Festoil-ISO 4113

## **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6h

1. Edition

VE 4/9 F 2250 R 78 0 460 494 062/063

supersedes VWW company: 086T-1,6 engine:

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers mm

**Test Instructions and Test Equipment** 

see VDT-W-460/...

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,0-4,4	mm	0,75	
1.2 Supply-pump pressure	1500	5,5-6,1	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with	600	23,5-24,5	cm <sup>3</sup> /1000 strokes	0	
charge-air pressure Full-load delivery without	1500	43,5-44,5	cm³/1000 strokes	0,75	2,5(3,0)
charge-air pressure 1.4 Idle regulation	475	7,0-11,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm <sup>3</sup> /1000 strokes	0	
1.6 Start	2525	9,0-15,0	cm <sup>3</sup> /1000 strokes	0,75	
1.7 Load-dependent port-closing					

2. Test Spec	cifications	checking values in t	orackets ( )			
2.1 Timing device LDA=0,75bar	n = rev/min mm	1000 1,9-2,7(1,	6-3,0)	1500 (3,5-4,9)	225 6,2-7,0(	0 5,9-7,3)
2.2 Supply pump LDA=0,75bar	n = rev/min bar (kgf/cm²)	600 3,3-3,	9		225 7 <b>,4-</b> 8	-
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-	500 55-110(40-125)		2250 55-110(40-125)	
2.3 Fuel deliveries		<u> </u>			3. Dimen	tor assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2730-2870 2525 2250 1500 +1000 600	0 38,5-40,5 33,5-34,5	(8,0-16,0) (37,2-41,8) (41,7-46,3) (31,7-36,3) (21,0-27,0)	0,75 0,75 0,75 0,75 0,3 0	K KF MS SVS	3,2-3,4 5,7-5,9 1,2-1,4 4,4
switch-off	2250	0			% XK ₹ XL	18,4-20,4 10,0-13,6
End stop	1200 475 440 520	max. 5,0	(5,0-13,0)		+ Use ad	roke 4,0 mm justing nut o correct.
2.4 Solenoid	cut-in voltage	min 1	0 V			

**D14 BOSCH** 

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rated voltage 12V

Festoil-ISO 4113

WPP 001/4 VWW 1,6L

1. Edition

VE 4/9 F 2250 R 79-1 R 79-1 P

supersedes

engine:

VWW company: 086 T-1,6-Autom.

0 460 494 100 0 460 494 101

Overflow temperature 45° C

Test Instructions and Test Equipment

Pre-stroke setting

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings	***************************************	Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,0-4,4	mm	0,75	
1.2 Supply-puthp pressure	1500	5,5-6,1	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with	600	23,5-24,5	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
charge air pressure Full-load delivery without	1500	43,5-44,5	cm <sup>3</sup> /1000 strokes	0,75	
charge-air pressure  1.4 Idle regulation	475	7,0-11,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm <sup>3</sup> /1000 strokes	0	
1.6 Start	2525	9,0-15,0	cm <sup>3</sup> /1000 strokes	0,75	
1.7 Load-dependent port-closing					

2. Test Spec	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min	1000	1500	2250
LDA=0,75bar	mm	1,9-2,7(1,6-3,0)	(3,5-4,9)	6,2-7,0(5,9-7,3)
2.2 Supply pump	n = rev/min	1600		2250
LDA=0,75bar	bar (kgf/cm²)	3,3-3,9		7,4-8,0
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		2250 55-110(40 <b>-</b> 125)

2.3 Fuel deliveries					3. Dimen	tor assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)	Designation	and adjustment mm
End stop	2730-2870 2525 2250 1500 +1000 600	0 38,5-40,5 33,5-34,5	(8,0-16,0) (37,2-41,8) (4,7 -46,3) (31,7-36,3) (21,0-27,0)	0,75	K KF MS SVS	3,2-3,4 5,7-5,9 1,2-1,4 max.4,4
switch-off	2250	0			♦ XK ¬ XL	18,4-20,4 10,4-12,7
Idle stop End stop	1200 475 440 520	max.10,0	(5,0-13,0)	0	Use ad	roke 4,0 mm justing nut o correct.
2.4 Solenoid	cut-in yoltage	min. rated volt	10 V age 12V	-		

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315

46

WPP 001/4 VWW 2,0b

in

VE 5/10 F 2400 L 45-1 (P) 0 460 405 007; 008

supersedes company: VW/Volvo engine: 069.3

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,14

 $_{\rm mm}$  ± 0,02 (0,04)

see VDT-W-460/...

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	2,6-3,0	mm		
1.2 Supply-pump pressure	1400	4,9-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with	1400	33,5-34,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/9000 strokes		
charge-air pressure 1.4 Idle regulation	375	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.56,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2500	22,0-26,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	1000 1,4-2,4(1,2-2,6)	1400 (2,1-3,5)	2400 5,1-5,9(4,8-6,2)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 2,8-3,4		2400 7,4-8,1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		2400 55-110(40-125)
2.3 Fuel deliveries				3. Dimensions tor assembly and adjustment

2.3 Fuel deliveries				
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2650 2500 2400 1400 750		(20,0-28,0) (27,2-41,8) (31,7-36,3) (23,0-29,0)	
switch-off	2400	0		
Idle stop	500 375	max. 3,0	(4,0-12,0)	
End stop	400 500			
2.4 Solenoid	cut-in voltage	min.	10 V	

Designation	mm
к	
KF	5,7-5,9
MS	1,7-1,9
svs	max.3,0
ax XK	18,5-20,5
X XL	9,0-12,5
Observations	
	:

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WPP 001/4 VWW 2,0bl

1. Edition

VE 5/10 F 2400 L 45 (P) 0 460 405 005; 006

supersedes

VW/Volvo company:

069.3 engine:

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers 0,14

Test Instructions and Test Equipment

Pre-stroke setting

2. Test Specifications checking values in brackets (

 $\pm$  0,02 (0,04)

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	2,6-3,0	mm		
1.2 Supply-pump pressure	1400	4,9-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with	1400	33,5-34,5	cm³/1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 strokes		
charge-air pressure 1.4 Idle regulation	375	6,0-8,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.56,0	cm <sup>3</sup> /1000 strokes		
1.5 Start	2500	22,0-26,0	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2.1 Timing device	n = rev/min	1000		1400		2400
	mm	1,4-2,4(1,	2-2,6)	(2,1-3,5)	5,1-5,9(4,8-6,2	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 2,8-3,			2400 7,4-8,1	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)				2400 10(40-125)
2.3 Fuel deliveries					3. Dimen	Sions for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)	Designation	and adjustment mm
End stop	2650 2500 2400 1400 750		(20,0-28,0) (27,2-31,8) (31,7-36,3) (23,0-29,0)		K KF MS SVS	5,7-5,9 1,7-1,9 max.3,0
switch-off	2400	0			& XK	18,5-20,5 9,0-12,5
idle stop	500 375	max.3,0	(4,0-12,0)		Observations	
End stop	400 500	min.23,0 max.23,0				
2.4 Solenoid	cut-in volta	cut-in voltage min.10 V rated voltage 12V				

Testoil-ISO 4113

WPP 001/4 VWW 2,0a 1. Edition

En

VE 5/10 F 2400 L 35 (P) 0 460 405 001; 002

supersedesVWW company: Audi 100 engine:

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,14

 $\pm$  0,02 (0,04)

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	2,6-3,0	mm		
1.2 Supply-pump pressure	1400	5,0-5,6	bar (kgf/cm²)		
1 3 Full-load delivery with	1400	33,5-34,5	cm <sup>2</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 strokes		
charge-air pressure 1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1 5 Full-speed regulation	100	min.56,0	cm³/1000 strokes		ļ
1.6 Start	2500	22,0-26,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing				·	

2. Test Spe	cifications	checking values in brackets (	)		
2.1 Timing device	n = rev/min mm	1000 1,4-2,4(1,2-2,6)	1400 (2,1-3,5)	2400 5,1-5,9(4,8-6,2)	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 2,8-3,4		240 7,4-8	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)			(40-125)
2.3 Fuel deliveries				3. Dimens	Sions for assembly and adjustment
Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	2650 2500 2400 1400 750	7,0-11,0 (5,0-13,0) (20,0-28,0 28,0-31,0 (27,2-31,8 (31,7-36,3 24,5-27,5 (23,0-29,0	3)	K KF MS SVS	5,7-5,9 1,7-1,9 max.3,0
switch-off	2400	0		∜ XK % XL	18,5-20,5 9,0-12,5
ldle stop	500 375	max.3,0 (4,0-12,0)		Observations	
End stop	400 500	min.23,0 max.23,0			
2.4 Solenoid	cut-in voltag	e min.10,0 V rated voltage 12V			

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WPP 001/4 MAN 3,7d 1. Edition

supersedes

company: MAN

engine: D 0224 ME

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

VE 4/10 F 900 R 57-3

0 460 404 016

1. Settings	Rot. speed	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	850	4,5-4,9	mm		
1.2 Supply-pump pressure	850	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with	850	57,0-58,0	cm <sup>3</sup> /1000 strokes		2,5(3,5)
charge-air pressure Full-load delivery without			cm³/1000 stroFes	 	
charge-air pressure	350	10,0-14,0	cm <sup>3</sup> /1000 stro (es		2,5(3,5)
1.5 Full-speed regulation	100	min. 60,0	cm <sup>3</sup> /1000 strckes		
1 6 Start	900	45,0-51,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	500 1,7-2,5(1,4-2,8)	850 (4,0-5,4)	900 4,8-5,6(4,5-5,9)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 3,3-3,9		
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		900 55-110(40-125)
		<del></del>		2 Dimonejone

		33-110(40	123)			(
2.3 Fuel deliveries					3. Dimer	ISIONS for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	930 900	max.10,0	(43,5-52,5)		к	
	850 500	57,0-58,0	(43,5-52,5) (54,8-60,2) (50,1-56,9)		KF	5,7-5,9
	300	01,5-55,5	(30.1 30,3)		MS	1,1-1,3
					svs	3,9-4,1
switch-off	900	0			XeK	25,0-27,0
	300				ЖL	13,2-16,5
Idle stop	400-450 350	0	(7,5-16,5)		Observations pushing 6	electronagnet
End stop	/;00 500	min.55,0 max.55,0				
2.4 Soleno	cut-in volta	-	0414			
		rated vo	ltage 24V		<u> </u>	

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WPP 001/4 MAN 3,7A 1.Ausgabe

Testoil-ISO 4113

VE 4/10 F 1500 R 42 0 460 404 007

company D 0224 M

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

0,2

 $mm \pm 0.02(0.04)$  mm

see VDT-W-460/

1. Settings	Rot speed rev/min	Settings	•	Charge-air press bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	1000	5,3-5,7	mm		To a to a to a to a to a to a to a to a
1 2 Supply pump pressure	1000	5,5-6,1	bar (kgf/cm²)		1
1.3 Full-load delivery without charge-air pressure	1000	61,5-62,5	cm³/1000 strokes		2,5(3,5)
Full-load delivery with charge-air pressure			cm³/1000 strokes		
1.4 Idle speed regulation	350	10,0-14,0	cm <sup>3</sup> /1000 strokes		2,5(3,5)
1 5 Start	100	min. 60,0	cm <sup>3</sup> /1000 strokes		
1 6 Fulf-load speed regulation	1650	7,0-13,0	cm <sup>3</sup> /1000 strokes		
1 7 Load-dependent start of delivery					

2. Test Spe	cifications	checking values in brackets (	)	The state of the s	
2 1 Timing device	n = rev/min mm	600 2,6-3,4(2,3-3,7)	1000 (4,8-6,2)	1400 7,6-8,4(7,3-8,7)	****
2 2 Supply pump	n = rev/min bar (kgl/cm²)	600 3,6-4,2		1500 7,0-7,6	-
Overflow delivery	n = rêv/min cm³/10 s	500 55-110(40-125)		1500 55-110(40 <b>-</b> 125)	

2 3 Fuel delivenes			
Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press
End stop	1700-1800 1650 1550 1500 1000 600	0 (5,5-14,5) max.60,0 68,5-71,5 (67,35-72, (59,35-64, 57,25-60,75(55,6-62,4	65) 65)
switch-off	1500	0	
Endanschlag	380-430 350 400 470	0 (7,5-16,5)	
2.4 Salenoid	max cut in voltage	xxx min. 10,0 V Nennspannung 12,0 V	

3. Dimer	for assembly and adjustment
Designation	mm
K	
KF	5,7-5,9
MS	1,3-1,5
svs	max.2,0
ХК	18,6-20,6
ΒΧL	9,7-13,5
Observations	

D 21 BOSCH

WPP 001/4 FIA 5,5b

1. Edition

En

VE 5/11 F 1125 R 58-1 0 460 415 002

supersedes

Fiat company:

engine:

8055.04.250

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

0,2

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.11 Timing device travel	900	4,8-5,2	mm		
1.2 Supply-pump pressure	900	4,5-5,1	bar (kgf/cm²)		
1:3 Full-load delivery with charge-air pressure	900	65,0-66,0	cm <sup>3</sup> /1000 strokes		2,5(3,5)
Full-load delivery without charge-air pressure			cm³/1000 strokes		
1.4 Idle regulation	350	11,5-15,5	cm <sup>3</sup> /1000 strokes		2,5(3,5)
1 5 Full-speed regulation	100	min. 70,0	cm <sup>3</sup> /1000 strokes		
ा 6 Start	1175	35,0-41,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spec		checking values in brackets ( )	900		1100
2 1 Timing device	n = rev/min	400 1,1-1,9(0,8-2,2)	(4,3-5,7) $6,3-7,1(6,0)$		
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,7-3,3			1100 5-6,1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)			1125 0(40-125)
2 3 Fuel deliveries	1			3. Dimens	tor assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	1270-1370 1175 1125 900 500	0 (33,5-42,5) 63,2-65,8 (61,8-67,2) (62,8-68,2) 54,25-57,75(52,6-59,4)		K KF MS SVS	5,4-5,6 1,5-1,7 4,3-4,5
switch-off	1125	0		x XK	25,0-27,0 9,2-12,5
idle stop	420-500 350	0 (9,0-18,0)		Observations	
End stop	150 250	min.70,0 max.70,0			
2.4 Scienoid	cut-in voltag	e min.10,0 V rated voltage 12V			

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Festoil-ISO 4113

# Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 1,3 A 1. Edition

VE 4/8 F 2500 R 61 0 460 484 006

FIAT/FIASA company:

engine:

X8/29

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

mm

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1600	5,6-6,0	mm		
•	1600	4,5-5,1	bar (kgf/cm²)		
1.2 Supply-pump pressure	1600	20,0-21,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.3 Full-load delivery with charge-air pressure Full-load delivery without			cm³/1000 stroķes		
charge-air pressure	350	8,0-14,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.29,0	cm³/1000 strokes		
	2650	9,0-15,0	cm³/1000 strokes		
1.6 Start  1.7 Load-dependent port-closing	1600				

2. Test Spe	cifications	checking values in brackets (	)		
2.1 Timing device	n = rev/min mm	1000 2,4-3,2(2,1-3,5)(5	1600 ,1-6,5)7,	2000 ,8-8,4(7,4-8	2400 ,8)9,4-10,2(9,1-10,5)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 1,1-1,7			2500 7,2-7,8
Overflow delivery	n = rev/min cm³/10 s	500 55-110(40-125)			2500 55-110(40-125)

	1			
2.3 Fuel deliveries				
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2800-2950 2750 2650 2500 2000 1600 600	19,3-21,7 20,0-22,0	(1,0-9,0) (8,0-16,0) (18,2-22,8) (18,7-23,3) (18,2-22,8) (14,5-20,5)	
switch-off	2500	0		
ldle stop	550 450 350	0 max.4,0	(7,0-15,0)	
End stop	400 500	min. 24,0 max. 26,0	,	
2.4 Solenoid	cut-in voltag			

3. Dimens	Sions for assembly
Designation	and adjustment mm
к	3,0-3,2
KF	5,7-5,9
MS	1,4-1,5
svs	max.3,0
+FH	1,8-2,4
₄× XK	20,2-22,2
<sup>B</sup> x XL	8,8-12,2
Observations	
+ operati	ng stroke

(cold-start accel.)

**BOSCH** 

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WPP 001/4 FIA 1,7 A 1. Edition

En.

VE 4/9 F 2300 R 54 0 460 494 044 supersedes company: Fiat engine: X 8/28

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

-- mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,3-4,7	mm		
1.2 Supply-pump pressure	1500	5,1-5,7	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	34,2-35,2	cm <sup>3</sup> /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure			cm³/1000 strokes		
1.4 Idle regulation	350	8,0-12,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.48,0	cm³/1000 strakes		
1.6 Start	2400	16,0-22,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	1500				

2. Test Spec	ifications	checking values in t	orackets ( )			
2.1 Timing device	n = rev/min mm	800 1,8-2,6(1		1500 (3,8-5,2)		300 9(6,8-8,2)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,5-3,			2300 6,9 <b>-</b> 7,5	
Overflow delivery	n = rev/min cm³/10 s	500 55-110(40				300 0(40-125)
2.3 Fuel deliveries		<u> </u>			3. Dimen	for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2500 2400 2250 1500 600		(5,0-13,0) (15,0-23,0) (26,7-31,3) (32,4-37,0) (22,0-28,0)		K KF MS SVS	3,2-3,4 5,7-5,9 1,7-1,9 max.3,5
switch-off	2300	0			Å XK Å XL	20,1-22,1 9,5-13,3
idle stop  End stop	400-540 400 350 400	0 max.4,0	(6,0-14,0)		Observations	
2.4 Solenoid	480 cut-in voltage	411 111 0	10,0 V ltage 12V			

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WPP 001/4 VWW 2,3 b

1. Edition

En

VE 6/10 F 2400 L 32-1 (P) 0 460 406 009; 010

supersedes company.VW

engine: 087/10 Autom.

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>	
1.1 Timing device travel	1500	3,0-3,4	mm			
1.2 Supply-pump pressure	1500	5,1-5,9	bar (kgf/cm²)			
1.3 Full-load delivery with charge-air pressure	1500	27,0-28,0	cm <sup>3</sup> /1000 strokes cm <sup>3</sup> /1000 strokes		2,5(3,0)	
Full-load delivery without charge-air pressure 1 4 Idle regulation	350	10,0-14,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)	
1.5 Full-speed regulation	100	min. 45,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)	
1.6 Start	2600	15,5-21,5	cm <sup>3</sup> /1000 strokes			
1.7 Load-dependent port-closing	-	-				

2. Test Spe	cifications	checking values in brackets (	)		
2.1 Timing device	n = rev/min	1000 0,8-1,6(0,5-1,9)	1500 (2,5-3,9)	2000 4,5-5,3(4,2-5,6	2400 )5,4-6,2(5,1-6,5)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,7-3,5			2400 6,6-7,4
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)			2400 55-110(40-125)
2.3 Fuel deliveries				3. Dim	ensions for assembly and adjustment

2.3 Fuel deliveries				
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2700 2600 2400 1500 750		(14,5-22,5) (22,2-26,8) (25,2-29,8) (25,0-31,0)	
switch-of	2400	0		
Idle stop End stop	400 350 400 500	3,0-9,0 min.30,0 max.30,0	(8,0-16,0)	
2.4 Solenoid	cut-in voltag	111 [ 11	. 10,0 V	

Designation	tor assembly and adjustment mm			
к	3,2-3,4			
KF	6,4-6,6			
MS	1,4-1,6			
svs	max.3,0			
AX XK	18,5-20,5			
Bx XL	9,2-12,9			
Observations	<u>. L., </u>			
Stop chec n = 2400	k (lever) at min/1			

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6

Testoil-ISO 4113

**Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 VMA

1. Edition

VE 5/11 F 2150 L 101

0 60 415 003

supersedes =

company: VM-Cento

HR 588 HT

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,2

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
, 1.1 Timing device travel	1800	5,9-6,3	mm	0,75	
1.2 Supply-pump pressure	1800	6,3-6,9	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with	600	32,5-35,5	cm <sup>3</sup> /1000 strokes	0	2,5(4,0)
charge-air pressure Full-load delivery without	2000	38,5-39,5	cm³/1000 stroķes	0,75	
charge-air pressure 1.4 Idle regulation	400	9,0-13,0	cm <sup>3</sup> /1000 strokes	0	2,5(4,0)
1.5 Full-speed regulation	100	min. 50,0	cm <sup>3</sup> /1000 strokes	0	
1.6 Start	2400	11,5-17,5	cm <sup>3</sup> /1000 strokes	0,75	
1.7 Load-dependent port-closing	-	_			

2. Test Spe	cifications	checking values in brackets ( >	)	
2.1 Timing device	n = rev/min mm	1000 1,7-2,5(1,4-2,8) 4	1500 ,5-5,1 (4,1-5,5)	1800 2150 (5,4-6,8)7,5-8,3(7,2-8,6
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,3-2,9		2150 7,5 <b>-</b> 8,1
Overflow delivery	n = rev/min cm³/10 s	500 55-110(40-125)		2150 55-110(40-125)

2.3 Fuel deliveries					3. Dimens	tor assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2450 2400 2150 2000 1500 700 600	35,7-38,3 42,7-45,3	(1,5-10,5) (10,0-19,0) (34,3-39,3) (36,3-41,7) (41,3-46,7) (38,6-45,4) (30,6-37,4)	0,75 0,75 0,75	K KF MS SVS	5,9-6,1 0,9-1,1 3,0
switch-off	2150	0			Ax XK	20,2-22,2
idle stop  End stop	800 400 420 500	max. 3,0	(6,5-15,5)		Observations	
2.4 Solenoid	cut-in voltage	min.	10,0 V			

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46

WPP 001/4 STE 5,0d 1. Edition

En

VE 6/11 F 1150 R 92

0 460 416 020

supersedes

company:

engine:

Steyr WD 611.85

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

2. Test Specifications checking values in brackets (

Test Instructions and Test Equipment

see VDT-W-460/

Pre-stroke setting 0,2 mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,5-5,9	mm		
1.2 Supply-pump pressure	1000	6,2-6,8	bar (kgf/cm²)		
1.3 Full-load delivery with	1100	65,0-66,0	cm <sup>3</sup> /1000 strokes		2,5(4,0)
charge-air pressure Full-load delivery without			cm³/1000 stroķes		
charge-air pressure 1.4 Idle regulation	300	14,0-18,0	cm <sup>3</sup> /1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 65,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	1200	24,5-30,5	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2.1 Timing device	n = rev/min	700 1,9-2,7(1,		1000 (5,0-6,4	) 7,0-7.	1150 8(6,7 <b>-</b> 8,1)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	300 2,6-3				1150 7,0-7,6
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-			ı 55 <b>-1</b> 1	1150 10(40-125)
2.3 Fuel deliveries	I Pat annud	Fuel delivery		Charge-air press	3. Dimens	tor assembly and adjustment
Speed control lever	Rot. speed rev/min	cm <sup>3</sup> /1000 strokes		bar (kgf/cm²)		
End stop	1250-1300 1200 1100 800 500		(23,0-32,0) (62,8-68,2) (59,3-64,7) (55,6-62,4)		K KF MS SVS	5,2-5,4 1,3-1,5 max.6,0
switch-off	1150	0			* XK	20,2-22,2
ldle stop	360-420 300	0	(11,5-20,5		Observations	
End stop	200 280					
2.4 Solenoid	cut-ın voltag	<u> </u>				

**BOSCH** 

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**[estoil-ISO 4113]** 

## **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 SOF 2,5

1. Edition

VE 4/9 F 2200 R 88 0 460 494 091

supersedes

Sofim company:

engine:

8/44.65.201

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

**Test Instructions and Test Equipment** 

see VDT-W-460/...

Pre-stroke setting

0,3

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2100	8,3-8,7	mm		
1.2 Supply-pump pressure	2100	7,0-7,6	bar (kgf/cm²)		
1.3 Full-load delivery with	2100	30,5-31,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm <sup>3</sup> /1000 strokes		
charge-air pressure 1.4 Idle regulation	350	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.30,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2400	19,0-25,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	2100				

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	400 2,0-3,0(0-5,5)	1200 4,9-5,5(2,9-7,5)	2100 (6,2 <b>-</b> 10,8)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,9-3,5		2200 7,3-7,9
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		2200 55-110(40-125)

2.3 Fuel deliveries		<u> </u>			3. Dimens	for asser
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adju
End stop	2550 2400	max.4,0	(18,0-26,0)		к	_
	2200	29,8-31,8	(28,5-33,1)		KF	5,7
	2100 1200	34 5-37 5	(28,7-33,3) (33,7-38,3)		MS	0,9
	600	25,0-29,0	(24,0-30,0)		svs	max
					+FH	1,8
switch-off	2200	0	· · · · · · · · · · · · · · · · · · ·		≯ XK	25,0
					<sup>B</sup> x XL	8,9
idle stop	410-500 350	0	(4,0-12,0)		Observations + Operatin	ng str
End stop	400 500				(cold-st	
2.4 Solencid	cut-in voltaç	ge min.	. 10,0 V			

Designation	tor assembly and adjustment mm
к	
KF	5,7-5,9
MS	0,9-1,1
svs	max.2,6
+FH	1,8-2,4
≯ XK	25,0-27,0
₽k XL	8,9-12,3
Observations	

+ operating stroke (cold-start accel.)

**BOSCH** 

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rated voltage 12V

2. Test Specifications checking values in brackets (

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

WPP 001/4 MAN 5,6a1 1. Edition

Testoil-ISO 4113

VE 6/11 F 1500 R 55

0 460 416 009

supersedes MAN engine: D 0226 MF

Overflow temperature 45° C

Test Instructions and Test Equipment

see VDT-W-460/...

0,6 mm Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,0-6,4	mm		
1.2 Supply-pump pressure	1000	5,7-6,3	bar (kgf/cm²)		
1.3 Full-load delivery with	1000	63,5-64,5	cm <sup>3</sup> /1000 strokes		2,5(4,0)
charge-air pressure Full-load delivery without charge-air pressure			cm³/1000 stroķes		
1.4 Idie regulation	300	8,0-12,0	cm <sup>3</sup> /1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 50,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	1600	24,0-30,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2.1 Timing device	n = rev/min	600	1000		1400
	mm	3,7-4,5(3,4-4,8)	(5,5-6,9)	8,9-9.	7(8,6-10,0)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 4,2-4,8			1500 ,0-7 ,6
Overflow delivery	n = rev/min cm³/10 s	500 55-110(40-125)		55-11	1500 10(40-125)
2.3 Fuel deliveries				3. Dimen	Sions for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	1680 1600 1500 1000 600	max.8,0 (22,5-31,5 69,25-71,75(67,8-73, (61,3-66, 45,75-49,25(44,1-50,	2) 7)	K KF MS SVS	5,7-5,9 1,2-1,4 max.4,7
switch-off	1500	0		K L	25,0-27,0 11,8-15,2
Idl <del>e</del> stop	390-460 300	0 (5,5-14,5)		Observations pushing 6	electronagnet
End stop	450 530				
2.4 Solenoid	cut-in volta	min.20,0 V rated voltage 2	4,0 V		

0,6

WPP 001/4 MAN 5,6c

2. Edition

**Testoil-ISO 4113** 

VE 6/11 F 750 R 55-2

0 460 416 017

supersedes — MAN

D 0226 ME engine:

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

**Test Instructions and Test Equipment** 

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	750	4,0-4,4	mm		
1.2 Supply-pump pressure	600	4.3-4,9	bar (kgf/cm²)		
1.3 Full-load delivery with	700	54,5-55,5	cm <sup>3</sup> /1000 strokes		3,5 (4,0)
charge-air pressure Full-load delivery without	_	-	cm³/1000 strokes		
charge-air pressure 1.4 Idle regulation	300	7,0-13,0	cm <sup>3</sup> /1000 strokes		3,0 (4,0)
1.5 Full-speed regulation	100	min. 50	cm <sup>3</sup> /1000 strokes		
1 6 Start	750	44,0-50,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	-	-			

2. Test Spe	cifications	checking values in brackets ( )	
2.1 Timing device	n = rev/min mm	400 1,0-1,8(0,7-2,1)	750 (3,5-4,9)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	300 2,7-3,3	750 5,0-5,6
Overflow delivery	n = rev/min cm³/10 s		750 55-138(40-153)
2.3 Fuel deliveries			3. Dimensions

	cm <sup>3</sup> /10 s	55-138(40-15			•
2.3 Fuel deliveries				1	ISIONS for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	820 750	max. 2,0 (42,5-51,5) (52,4-57,6)		к	-
	700 600	(52,4-57,6)		KF	5,7-5,9
	600	49,0-53,0(47,6-54,4)		MS	1,2-1,4
				svs	4,6-4,8
switch-off	750	0		K	25,0-27,0
				L	11,2-14,2
Idle stop	460 300	max. 2,0 (5,5-14,5)		Observations	
End stop	400 500	min. 60 max. 60			
2.4 Salenoid	cut-in volt	age			

WPP 001/4 MAN 5,6d 1. Edition

En

VE 6/11 F 900 R 55-3

0 460 416 018

Pre-stroke setting

company: MAN engine: D 0226 ME

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

0,6

2. Test Specifications checking values in brackets (

Charge-air press. bar (kgf/cm²) Difference in **Settings** Rot. speed delivery cm<sup>3</sup> 1. Settings 4,9-5,3 850 mm 1.1 Timing device travel 5,5-6,1 850 bar (kgf/cm²) 1.2 Supply-pump pressure 2,5(4,0)55,0-56,0 cm<sup>3</sup>/1000 strokes 880 1.3 Full-load delivery with charge-air pressure cm<sup>3</sup>/1000 strokes Full-load delivery without charge-air pressure 2,5(4,0)7,0-13,0 cm<sup>3</sup>/1000 strokes 300 1.4 Idle regulation min. 50,0 100 cm<sup>3</sup>/1000 strokes 1.5 Full-speed regulation 44,0-50,0 cm<sup>3</sup>/1000 strokes 900 1.6 Start 1.7 Load-dependent port-closing

2.1 Timing device	n = rev/min mm	600 3,3-4,1(3,0	3,3-4,1(3,0-4,4)			
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 4,5-5,1				
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-	125)			500 (40-125)
2.3 Fuel deliveries					3. Dimen	sions tor assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)	Designation	mm
End stop	950-1000 900 880 600	0 (40,5-44,5	(41,5-51,5) (52,8-58,2) (39,1-45,9)		K KF MS SVS	5,7-5,9 1,2-1,4 4,6-4,8
switch-off	900	0			XK XL	25,0-27,0 11,8-15,2
Idle stop	360-410 300	0	(5,5-14,5)		Observations pushing	electronagnet

BOSCH

2.4 Solenoid

End stop

min.45,0

max.44,5

min.10,0 V

rated voltage 12V

450

530

cut-in voltage

2. Test Specifications checking values in brackets (

WPP 001/4 MAN 5,6e 1. Edition

**Testoil-ISO 4113** 

VE 6/11 F 1500 R 55-4

0 460 416 019

company: MAN

engine:

D 0226 ME

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

0,6 Pre-stroke setting

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,0-6,4	mm		
1.2 Supply-pump pressure	1000	5,7-6,3	bar (kgf/cm²)		
1.3 Full-load delivery with	1000	58,5-61,5	cm <sup>3</sup> /1000 strokes		2,5(4,0)
charge-air pressure Full-load delivery without			cm³/1000 strokes		
charge-air pressure	300	7,0-13,0	cm <sup>3</sup> /1000 strokes		2,5(4,0
1.5 Full-speed regulation	100	min. 50,0	cm³/1000 strokes		
1.6 Start	1500	30,5-36,5	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

21 1 0 0 0 0 p 0		600		1000	1	400
2.1 Timing device	n = rev/min mm	3,7-4,5(3,	4-4,8)	(5,5-6,9)	8,9-9,	7(8,6-10,0)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 4,2-4,	8		-	400 2-7,8
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40	-125)			500 0(40 <b>-</b> 125)
2.3 Fuel deliveries		1			3. Dimen	SionS for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	1570-1610 1500 1400 1000 600	64,5-67,5	(29,0-38,0) (63,3-68,7) (57,3-62,7) (38,1-44,9)		K KF MS SVS	5,7-5,9 1,2-1,4 4,6-4,8
switch-off	1500	0			AXK BXL	25,0-27,0 13,5-16,8
Idle stop	390-460 300	0	(5,5-14,5)		Observations pushing e	lectronagnet
End stop	450 530	min.45,0 max.44,5				
2.4 Solenoid	cut-in voltage	min.	10,0 V			

rated voltage 12V

WPP 001/4 MAN 5,6 b

2. Edition

VE 6/11 F 1500 R 49 0 460 416 008

Overflow temperature 45° C

supersedes MAN

company: D 0226 M

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0.6

mm = 0.02(0.04) mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,0-6,4	mm		
1.2 Supply-pump pressure	1000	5,7-6,3	bar (kgf/cm²)		
1.3 Full-load delivery with	-	-	cm <sup>3</sup> /1000 strokes		
charge-air pressure Full-load delivery without	1000	63,5-64,5	cm³/1000 strokes		2,5 (4,0)
charge-air pressure 1.4 Idle regulation	300	8,0-12,0	cm <sup>3</sup> /1000 strokes		2,5 (4,0)
1.5 Full-speed regulation	1550	52,0-58,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	100	min. 60,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	-				

2.1 Timing device	n = rev/min	600 3.8-4,6(3,5-4,9)	1000 (5,5-6,9)	14 8,7-9,5 (8	00 ,4-9,8)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 3,2-3,8	7	1500 7,3-7,9	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110 (40-125)	55-11	1500 10 (40-125)	
2.3 Fuel deliveries		<u> </u>		3. Dimen	Sions for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery   cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	1680 1630 1550 1500 1000 600	max. 4,0 12,0-21,0 (50,5-59 69,5-71,5 (67,9-73 (61,3-66 46,0-49,0 (44,1-50	(,2) (,7)	K KF MS SVS	- 5,7-5,9 1,4-1,6 max. 4,6
switch-off	1500	0		xx xk xx xl	18,6-20,6 9,0-12,8
Idie stop  End stop	400-470 300 370	0 (5,5-14,	5)		ulling romagnet
2.4 Solenoid	470	min 20,0 V rated voltage 24,0	V		

Testoil-ISO 4113

#### **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 5,6a 1. Edition

VE 6/11 F 1500 R55-1 Overflow temperature 45° C

0 460 416 016

Setting of the pointer at a stroke of 1  $\,\mathrm{mm}$  in

relation to outlet "A".

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Pre-stroke setting

 $mm \pm 0.02(0.04) mm$ 

supersedes -

company: MAN

engine: D 0226 ME

Test Instructions and Test Equipment

see VOT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/sin²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,0-6,4	mm		
1.2 Supply-pump pressure	1000	5,7-6,3	bar (kgf/cm²)		
1.3 Full-load delivery with	1000	63,5-64,5	cm <sup>3</sup> /1000 strokes		2,5(4,0)
charge-air pressure Full-load delivery without			cm³/1000 strokes		
charge-air pressure 1.4 Idle regulation	300	8,0-12,0	cm³/1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 50,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	1600	24,0-30,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	600 3,7-4,5(3,4-4,8)	1000 (5,5-6,9)	1400 8,9-9,7(8,6-10,0)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 4,2-4,8		1500 7,0-7,6
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		1500 55-110(40-125)
				2 Dimensions

	Cm-710 S	55-110(40-125)		55-110	(40-125)
2.3 Fuel deliveries				3. Dimen	ISIONS for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm²)	Designation	mm
End stop	1680 1600 1500 1000 600	max.8,0 (22,5-31,5) 69,25-71,75(67,8-73,2 (61,3-66,7 45,75-49,25(44,1-50,9		K KF MS SVS	 5,7-5,9 1,4-1,6 max. 4,6
switch-off	1500	0		₩K NL	25,0-27,0 11,8-15,2
Idle stop End stop	390-460 300 450 530	0 (5,5-14,5)			Pulling romagnet
2.4 Solenoid	cut-in voltag	e 20,0 V rated voltage 24,0 V			

Testoil-ISO 4113

## Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 STE 6,5a

1. Edition

VE 6/11 F 1300 R 98 Overflow temperature 45° C 0 460 416 021

company: Steyr

WD 612.01

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	2,6-3,0	mm		
1.2 Supply-pump pressure	1000	6,1-6,7	bar (kgf/cm²)		
1.3 Full-load delivery with	1280	67.0-68,0	cm <sup>3</sup> /1000 strokes		2,5(4,0)
charge-air pressure Full-load delivery without			cm³/1000 strokes		
charge-air pressure 1.4 Idle regulation	300	14,0-18,0	cm <sup>3</sup> /1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 95,0	cm³/1000 strokes		
1.6 Start	1450	18,0-24,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spec	affications	checking values in I	brackets ( )			
2.1 Timing device	n = rev/min mm	600 0,9-1,7(0,	6-2,0)	1000 (2,1-3,5)	3,8-4,6	1280 (3,5-4,9)
2.2 Sunply pump	n = rev/min bar (kgf/cm²)	300 3,4-4,0	ı		7,	1300 2-7,8
Overflow delivery	n = rev/min cm³/10 s	500 55-110(40-	125)		55-110	1300 (40-125)
2.3 Fuel deliveries	1				3. Dimens	Sions for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	1500-1550 1450 1280 1000	0	(16,5-25,5) (64,8-70,2) (70,3-75,7)		K KF	3,2-3,4 5,4-5,6
	500	78,5-72,5	(67,1-73,9)		MS SVS	1,3-1,5 max.6,0
switch-off	1300	0			ax XK	20,2-22,2
idle stop	370-430 300	0	(11,5-20,5)		Observations	
End stop	200 280					
2.4 Solenoid	cut-in voltag	<u> </u>				

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WPP 001/4 STE 4,0 F 1. Edition

En

VE 4/11 F 1200 R 94 0 460 414 003

Overflow temperature 45° C

supersede

company: engine: Steyr WD 411.85

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/.

**Testoil-ISO 4113** 

1. Settings	Rot. speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,8-5,2	mm		
1.2 Supply-pump pressure	1000	5,6-6,2	bar (kgf/cm²)		
1.3 Full-load delivery with	1000	63,0-65,0	cm <sup>3</sup> /1000 strokes		2,5(4,0)
charge-air pressure Full-load delivery without			cm <sup>3</sup> /1000 strokes		
charge-air pressure  1.4 Idle regulation	300	18,0-22,0	cm <sup>3</sup> /1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 80,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	1300	9,5-15,5	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in	brackets ( )			æ.
2.1 Timing device	n = rev/min mm		600 1,4-2,2(1,1-2,5)		1180 6,3-7,1(6	) 5,0-7,4)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 3,0-3,6		1180 6,6-7,2		
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-100(40 <b>-</b> 125)		1200 55-110(40 <b>-</b> 125)		
2.3 Fuel deliveries  Speed control lever	Rot. speed	Fuel delivery		Charge-air press.	3. Dimens	tor assembly and adjustment
End stop	1320-1370 1300 1180 1000 500	0 65,5-66,5	(8,0-17,0) (63,3-68,7) (61,3-66,7) (54,1-60,9)	Car (ng//CHP)	K KF MS SVS	3,2-3,4 5,2-5,4 0,9-1,1 max.3,0
switch-off	1200	0			X XK	20,2-22,2
edie stop	350-410 300 200 280	0 min.80,0 max.80,0	(15,5-24,5)		Observations	
2.4 Solenoid	cut-in voltage		A CONTRACTOR OF THE PROPERTY O			

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WPP 001/4 VWW 1,6c 1. Edition

VE 4/9 F 2400 R 66-13

Overflow temperature 45° C

company: Passat-Autom.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

mm

Test Instructions and Test Equipment

see VDT-W-460/..

Pre-stroke setting

Testoil-ISO 4113

0 460 494 084

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
, 1.1 Timing device travel	1500	3,1-3,5	mm		:
1.2 Supply-pump pressure	1500	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with	1500	33,0-34,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without charge-air pressure			cm³/1000 strokes		
1.4 Idle regulation	475	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm³/1000 strokes		
1.6 Start	2600	11,0-17,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (2,6-4,0)	2400 6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,1-2,7		2400 7,0-7,6
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-115(40-125)		2400 55-115(40-125)
<u> </u>		_ <del></del>		

2.3 Fuel deliveries				
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2700 2600 2400 1500 600	27,7-30,3	(2,0-10,0) (10,0-18,0) (26,7-31,3) (31,2-35,8) (20,0-26,0)	
switch-off	2400	0		
idle stop	1200 650 475	max. 7,0 max. 5,0	(4,0-12,0)	
End stop	400 500			
2.4 Salenaid	cut-in voltage		10,0 V	1

Designation	and adjustment
	mm
к	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
svs	max.2,5
+FH	1,8-2,4
я XK	18,4-20,4
R XL	10,4-12,8
Observations + Operatin (cold-st	ng stroke tart accel.

EAS

WPP 001/4 IHC 6,6a 1. Edition

En

VE 6/12 F 1250 R 38 (P)

Values only apply to test nozzle-and-holder assembly 1 688 901 020

Overflow temperature 45° C

supersedes I HC

company: DT 402/3994

0 450 426 001/008 Setting of the pointer at a stroke of 1 mm in

relation to outlet "A".

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

± 0,02 (0,04) mm

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,5-4,1 mm		
1.2 Supply-pump pressure	1000	4,9-5,5 bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	900	117,5-118,5 cm <sup>3</sup> /1000 strokes		2,5(4,5)
Full-load delivery without		cm <sup>3</sup> /1000 strokes		
charge-air pressure  1.4 Idle regulation	500	15,0-21,0 cm <sup>3</sup> /1000 strokes		2,5(4,5)
1.5 Full-speed regulation	100	min. 95,0 cm <sup>3</sup> /1000 strokes		
1.6 Start	1300	56.0-64,0 cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing				

2. Test Spe	ecifications <b>existence</b>	checking values in brackets (	)	
2.1 Timing device	n ≈ rev/min mm	600 1,3-2,1(1,0-2,4)	1000 (3,1-4,5)	1200 4,6-5,4(4,3-5,7)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 3,2-3,8		1250 5,6-6,2
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		1250 55-110(40-125)
2.3 Fuel deliveries				3. Dimensions

	L	l		
2.3 Fuel deliveries				
Speed control lever	Rot, speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)
End stop	1370-1420 1300 1230 900 700 500	97,0-101,0	(55,0-65,0) (107-113) (115-121) (96,0-102,0) (90,2-97,8)	
switch-off	1250	0		
Idle stop  End stop	520-570 500 260 380		(13,0-23,0)	
2.4 Solenoid	cut-in voltage			

ess.	Designation	tor assembly and adjustment mm
	к	
	KF	5,4-5,6
	MS	0,8-1,0
	svs	4,6-6,0
	AK XK	20,2-22,2
	ex XL	9,6-12,9
	Observations	

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KHD 1 c 1 WPP 001/4

3. Edition

(7)

(1-2)EP/RSV..2011DL PES 2 A 80 D 310/3 RS1322 EP/RSV 325-1000 A8B733D(3) PES 3 A 75 ..1185, 1320 EP/RSV 325-1400 A8B742D(4) PES 4 A 75 ...1183 EP/RSV..694D, 742D PES 6 A 75 ...1197

supersedes 5.78 company KHD

engine F., L912

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Type designations and notes see page 5!

#### A. Fuel Injection Pump Settings

mm (from BDC) Port closing at prestroke

PES4A80..1300, PES3A80..1324, PES6A75..1326

Rotational speed rev/min	Control rod travel mm	85-2,05) Fuel delivery 7,50 cm '/100 strokes 3	Difference cm <sup>4</sup> / 100 strokes	Control rod travol mm	Fuel delivery  8Ø  cm²/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	5,2 - 5,6	0,4	9	3,1-3,5	
	9	2,7 - 3,5		6	0,1-0,6	
200	9	0,7 - 1,4		9	0,6-1,3	
		<u> </u>				

Control rod

travel

6

without auxiliary spring

with auxiliary spring

Adjust the fuel delivery from each outlet according to the values in [\_\_\_\_\_]

12,0

8,5

4,8

4,0

ca. 10,5

0.3 - 1.0

ca.

Control rod

travel

**B. Governor Settings** 

Upper rated speed

tevimin

1400

1430 1460

1440

1490

1600

Degree of

deflection

of control

ca.66

(5)

325-1400 A8B2011D (1)

4 Lower Degree of deflection of control lever 7	rated spe rev/min 8	ed Control rod travel mm 9		que control Control rod travel mm
ca.20	325 200 325 450 660	5,5 19 - 21 5,2-5,8 2,7-4,1 0 -1,5	1400 600	0 0,9-1,

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

intermediate rated speed

rev/min

Degree of

deflection

of control

lever

2 Full-loa	d stop	6 Rotational- speed limitat		l delivery racteristics	Starting Idle	fuel delivery	5a) Idle	stop
Test oil temp 40°C (104°F) rev/min cm³/1000 strokes t 2		Note changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm*/1000 strokes 7	rev/min	Control rod travel mm 9
(1)	60,0 - 61,0 (58,5 - 62,5)	1440-1450*	750	54, 5 - 56, 5 (52, 5 - 58, 5)			325	5,5

Checking values in brackets

\* 1 mm less control rod travel than col 2

#### (1A)

#### **B.** Governor Settings

1 Upper Degree of deflection of control lever	rated speed rev/min 2	Control rod travel mm	Intermediate Degree of deflection of control lever		ed  Control rod  travel  mm  6	4 Lower Degree of deflection of control lever	rev/min	ed Control rod travel mm 9	3 Tor rev/min 10	que control Control rod travel mm 11
ca.	900 950 980	16,0 10,0 4,0	without	auxi	liary spr	ca.26 ing	325 150	6,0 19 - 21 5,7-6,3	880 400	0 0,9-1,1
<b>⑤</b>	900 1000 1080	ca. 11,6 ca. 4,0 0,3 -1,5	with a	uxilia	ry spring		325 450 550	1,5-3,7 0 - 1		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	ad stop	6 Rotational- speed limitat		el delivery aracterístics	Starting Idle	fuel delivery	(5a) Idle	stop
Test oil tem rev/min 1	p 40°C (104°F) cm³/1000 strakes 2	Note changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
(2) 900	55,0 - 56,0 (53,5 - 57,5)	940-950 *					325	6,0
			(6a)					

Checking values in brackets

\* 1 mm less control rod travel than col 2

#### Testoil-ISO 4113

#### **B. Governor Settings**

325-1000 A8B733D (3)

1 Upper Degree of deflection of control lever	rev/min	Control rod travel mm	Intermediate Degree of deflection of control lever	rev/min	ed Control rod travel mm 6	4 Lower Degree of deflection of control lever 7	rated spe rev/min 8	Control rod travel mm	rev/min	tue control Control rod travel mm
ca.48	1000 1060 1110	16,0 10,0 4,0	without	auxi	liary spr	ca.19 ing	325 100 325	5,5 19 - 21 5,2-5,8	1000	0 0,9-1,1
5	1000 1080 1200	ca. 9,0 ca. 4,0 0,3-1,0	with a	uxilia	ry spring		400 500	1,2-3,0	300	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	ad stop			Starting Idle	fuel delivery		stop	
Test oil tem	p 40°C (104°F) cm 1/1000 strokes 2	Note changed to rev/min	rev/min	cm <sup>3</sup> /1 <b>000</b> strokes 5	rev/min 6	cm: <sup>3</sup> /1000 strokes 7	ļ	Control rod travel mm 9
(3) 1000	46,0 - 48,0	1040-1050*					325	5,5

Checking values in brackets

\* 1 mm less control rod travel than col 2

(4)

#### **B.** Governor Settings

	rated speed rev/min	Control rod travel mm	Intermediate Degree of deflection of control lever	rated spe	ed Control rod travel mm	Degree of deflection of control lever	rated spe rev/min 8	control rod travel mm	3 Tor rev/min 10	que control Control rod travel mm
ca.66	1400 1430 1460	12,0 8,5 4,8	withou	t auxi	liary spr	ca.20 ing	200 325	5,5 19 - 21 5,2-5,8	1400 1000	0 0,2-0,4
(5)	1420 1500 1580	9,2-10,4 2,0-3,4 0,3-1	with a	uxilia	ary spring		450 660	2,8-4,1	500	0,9-1,1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ad stop p 40°C (104°F) cm³/1000 strokes	6 Rotational- speed limitat. Note changed to rev/min 3	characteristics		Idle	fuel delivery  cm <sup>3</sup> /1000 strokes 7		estop Control rod travel mm 9
(4) 1400	54,5 - 56,5	1430-1440*	800	49,5 - 52,5			325	5,5
			6a)					

Checking values in brackets

\* 1 mm less control rod travel than col 2

#### Testoil-ISO 4113

#### **B. Governor Settings**

325-1	150	A8B694D	(5)

Upper Degree of deflection of control lever	rated speed rev/min 2	Control rod travel mm 3	Intermediate Degree of deflection of control lever		ed Control rod travel mm	Degree of deflection of control lever	rated spe rev/min 8	ced Control rod travel mm 9	レン	que control Control rod travel mm
ca.54	1150 1190 1210	12,0 7,8 5,0	withou	t auxi	liary spr	ca.21	325 200 325	5,5 19 - 21 5,2-5,8	1150 450	0 0,9-1,1
5	1130 1200 1210	8,0-9,6 5,0-7,5 0,3-1,0	with a	uxili	ary spring		400 500	1,6-3,5		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	oad stop				Starting Idle	fuel delivery	5a Idle stop		
Test oil tem	op 40°C (104°F) cm³/1000 strokes	Note changed to rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/ 1000 strokes 7		travel mm 9	
(5) See [	page 5!	1160-1170					325	5,5	
					<u></u>		<u> </u>	<u> </u>	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

(6)

1 Upper Degree of deflection of control lever	gree of liection travel Degree deflection control			rated spe rev/min 5	ed  Control rod  travel  mm  6	Lower Degree of deflection of control lever	rev/min	ed Control rod travel mm 9	3 Tor rev/min 10	que control Control rod travel mm
ca.66	1400 1430 1460	12,0 8,5 4,8	withou	t auxi	liary spr	ca.20 ing	325 200 325	5,5 19 - 21 5,2-5,8	1400 1000	0 0,2-0,4
<b>⑤</b>	1420 1500 1580	9,2-10,4 2,0- 3,4 0,3- 1	with a	uxilia	ary spring		450 660	2,8-4,1 0 - 1	1	0,9-1,1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	oad stop	6 Rotational speed limitat		el delivery aracteristics	Starting Idle	fuel deliver	(5a) Idle stop		
Test oil tem rev/min t	p 40°C (104°F) cm³/1000 strokes 2	Note changed to rev/min 3	rev/min	cm <sup>4</sup> /1000 strokes 5	rev/min 6	cm <sup>1</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
(6) 1400	58,0 - 60,0	1430 <b>-</b> 1440 <sup>*</sup>	800	51,0 - 54,0			325	5,5	
			(6a)						

Checking values in brackets

\* 1 mm less control rod travel than col 2

#### **B. Governor Settings**

#### Testoil-ISO 4113

1 Upper Degree of deflection of control lever	rated speed	Control rod travel mm	Intermediate Degree of deflection of control lever	Control rod travel mm	Degree of deflection of control lever	rated spe rev/min 8	eed Control rod travel mm 9	1.	que control Control rod travel mm 11
(5)									

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	ad stop	6 Rotational- speed limitat		el delivery aracteristics	Starting Idle	fuel delivery	5a Idle stop	
Test oil tem	p 40°C (104°F) cm³/1000 strokes	Note changed to rev/min	rev/min	cm³/1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes 7		Control rod travel mm 9
1								
							<u> </u>	

#### 1. Type designations and power outputs

Engine Pump	Output	at s	speed		- Manufacturer Governor	Item as	or
F 2 L 912	- 30	kw	(38HP) a	t	2400 min.		
PES 2 A 80	D 310/3	RS	1322		EP/RSV 325-1400 A 8 B 201 DL	1	
F 2 L 912	- 18	kw	(25HP) a	t	1800 min.		
PES 2 A 80	D 310/3	RS	1322		EP/RSV 325-900 A 7 B 2011 DL	2	
F 3 L 91?	- 27	kw	(37HP) a	t	2000 min Fendt		
PES 3 A 75	5 D 410/3	RS	1185		EP/RSV 325-1000 A 8 B 733 DL	3	
F 4 L 912	- 54	kw	(73HP) a	t	2800 min Berliet		
PES 4 A 75	5 D 410/3	RS	1183		EP/RSV 325-1400 A 8 B 742 DL	4	
F 6 L 912	-						
PES 6 A 75	5 D 410/3	RS	1197		EP/RSV 325-1150 A 8 B 694 DL	5 -	KHD 1 c
F 6 L 912	- 81	kw	(110HP)	at	2800 min Berliet		
PES 6 A 75	5 D 410/3	RS	1197		EP/RSV 325-1400 A 8 B 742 DL	6	
F 4 L 912	<u>-</u>						
PES 4 A 80	D 410/3	RS	1300		EP/RSV	7 -	KHD 1 c
F 3 L 912	_						
PES 3 A 80	D 410/3	RS	1324		EP/RSV	7 -	KHD 1 c
F 6 L 912	<u>-</u>						
PES 6 A 75	5 D 410/3	RS	1326		EP/RSV	7 -	KHD 1 c

#### 2. Notes

The remarks given under (7) and the governors (Items 1..6) are also used with the injection pumps and governors listed on KHD 1 c. The full-load deliveries for the possible combinations are given on KHD 1 c on pages 7 - 18 and on the present pages 1 - 4.

Testoil-ISO 4113

WPP 001/4 MB 5,7 w5

3. Edition

PES 6 A 90 D 410 RS 2569

RSV 350-1400 A0B 1135 L

supersedes 8.81

Daimler Benz

OM 352 92 kW (125 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings (2,20-2,40) Port closing at prestroke 2,25-2,35 mm

estoil-ISO 4113

mm (from BDC)

Rotational speed rev/min	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
1400	10,8+0,1	6,2-6,3	0,3(0,45)			
350 500 900	7,9-8,0 11,3-0,1 10,8-0,2	0,5-1,1 C, col.4-5 C, col.4-5	0,2(0,4) 0,4(0,55) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

1 Uppe	r rated speed		Intermediate rated speed			Lower rated speed			3 Torque control		
Degree of deflection of control lever	Control rod travel mm	travel mm rev/min			_	Control- lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	
loose	800	0,3-1,0	-	-	-	ca.21	350	4,1	1400 750	10,8+0,1	
	x =	5,0					350	7,9-8,0	500	10,8+0,3 11,3+0,1	
ca.70		50 = 9,8 525 = 4,0 3-1,7					580-640	= 2,0			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop Test oil temp 40°C (104°F) rev/min cm³/1000 strokes		Rotational- speed limitat Note changed to ) rev/min		el delivery aracteristics cm <sup>3</sup> /1000 strokes	Starting f Idle	uel delivery 5	•••	e stop Control rod travel
1	2	3	4	5	6	7	8_	9
1400	62,5-63,5 (60,5-65,5)	1440-1450*	900	44,5-47,5 (42,5-49,5) 53,5-56,5 (51,5-58,5)	100	79,25-89,25 16,2-16,6 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

VDT-WPP 001/4

2. Edition

PES 6 A 100 D 410 RS3020

EP/RSV 400-1100 A 7 B 700 L

10.74

company engine

John Deere 6404 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0+0,1

Port closing mark 14 ° mm (from BDC) after port closing.

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm <b>2</b>	cm <b>3</b> /100 strokes 3	cm³/ 100 strokes 4	mm 2	cm³/100 strokes	mm 6
1000	9	7,5 - 8,8				
	6 12	3,2 - 4,2 12,4 -13,4				
200	9	4,0 - 5,2				

Adjust the fuel delivery from each outlet according to the values in I

#### **B.** Governor Settings

1 Uppe	r rated speed	i rev/min	Intermed	liate rated	speed	4	Lower	rated speed	3 Torque control		
Degree of deflection	Control rod travel	Control rod travel				Control- lever		Control rod travel		Control rod travel	
of control lever	mm 2	mm rev/min	4	5	6	deflection in degrees 7	rev/min 8	mm 9	rev/min 10	mm 11	
ca.66	1100	L		<u></u>	<del></del>	ca.26	400	6,3	1080	0	
	1120	6,2	sprin	g			150	19-21			
	1100 1140	11,5-12,5 2,0- 5,0					400 430	6,0-6,6 3,0-4,6	-	-	
(2a)	1240	0,3-1,0					500	0 - 1			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp 40°C (104°F)	Note	Speed limitat Sa characteristics		Starting fuel delivery 5 Idle			(4a) Idle stop		
rev/min	cm³/1000 strokes	changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm\$/1000 strokes 7	rev/min B	travel mm 9		
1080	107,5-109,5	1110-1120*	150	11,5 - 21,5	100	15,6-17,6	400	11,5- 15,5 cm <sup>3</sup> /1000		

Checking values in brackets

\* 1 mm less control rod travel than col 2

6.75

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

Testoil-ISO 4113

40

WPP 001/4 MB 5,7 v 3 8. Edition

En

PES 6 A 90 D 410 RS 2596 1 - 5 - 3 - 6 - 2 - 4 RSV 575-1250 A 1 B 618 L

supersedes company 10.80 Daimler-Benz

engine

OM 352 A 115 kW (156 PS)

Speed difference between control-rod travel reduced 1 mm by governor and control-rod travel position 4 mm = 25-3

by governor and control-rod travel position 4 mm = 25-35 min/1. All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A Evol Injection Dump Cottings

 $= -60 - 12 - 180 - 240 - 300^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

A. Fuel Injection Pump Settings

Port closing at prestroke

Festoil-ISO 4113

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm1/100 strokes	cm³/ 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1230	13,2+0,1	7,7 - 7,8	0,3(0,45)			
575	7,2-7,4	0,8 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe Degree of	r rated speed	Control rod	Intermed	Intermediate rated speed				rated speed Control rod	3 to	3 forque control   Control rod   travel		
deflection of control lever	travel mm 2	travel mm rev/min 3	4	5	6	lever deflection in degrees 7	rev/min	travel mm 9	rev/min	mm		
loose	800 x =	0,3-1,0 4,0				ca.29	575 100 575	7,3 min.19,0 7,2-7,4				
ca.60	1275-1	260=12,2 295= 5,5 ,3-1,7					675 585-645	1,0 2,0				

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	II-load stop	6 Rotational- speed limitat	Ga Fuel delivery characteristics		Starting f	uel delivery 5	4a Idle stop	
rev/min	cm <sup>3</sup> /1000 strokes	Note changed to ) rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>9</sup> /1000 strokes	rev/min	Control rod travel mm
1230	77,5-78,5 (75,5-80,5)	1250-1260*			100 575	16,0-16,6 mm RW 79,25-89,25 9,25-15,25	:	

Checking values in brackets

\* 1 mm less control rod travel than col 2

WPP 001/4 MB 3,8 n 8

PES 4 A 90 D 410 RS 2570

A0B 764 L RSV 350-750

supersed€s company

Daimler Benz OM 314

engine

Generating sets

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings 2,25-2,35 Port closing at prestroke (2,2-2,4) mm

Testoil-ISO 4113

mm (from BDC)

Rotational speed	Control rod iravel	Fuel delivery	Difference cm³/ 100 strokes	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
700	11,3+0,1	4,8 - 4,9	0,3(0,45)			
350	8,8-9,0	1,1 - 1,7	0,2(0,4)			
			:			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

	r rated speed  Control rod  travel  mm  2		Intermed	diate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	3 To	rque control   Control rod   travel   mm   11
1oose	800 x =	0,3-1,0 3,5	-	-	-	ca.15	350 100	8,9 min.19,0		-
ca.26	10,3 4,0 875	750-755 785-795 0,3-1,7					350 380 <b>-</b> 440	8,8- 9,0 =2,0mm**		

\*\* Set idle-speed auxiliary spring at 2 mm control-rod travel,

#### C. Settings for Fuel Injection Pump with Fitted Governor

(4)	ull-load stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting fi	Starting fuel delivery 5 4a Idle stop			
Test oil to rev/min 1	emp 40°C (104°F) cm\$1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>9</sup> /1000 strokes	rev/min	cm <b>\$</b> /1000 strokes 7	rev/min	Control rod travel mm	
700	48,0-49,0 (46,0-51,0)	750-755*	-	-	100	79,25-89,25 bei 16,3- 16,7 mmRW		-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.82

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung  $\iota$  1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

VDT-WPP 001/4

1. Edition

PES 6 A 100 D 420 LS3024

EP/RSV 375-1050 A2B785D

supersedes

company

Case A 504 BDT

Test with case overflow valve! Pay attention to special governor setting!

engine (210 BHP)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,00-2,10

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cmi¥100 strokes 3	Difference cm³/ :00 strokes	Control rod travel mm	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,0	13,9 - 14,1	0,3(0,6)			
	(+0,1)					
375	6,1 (±0,1)	1,7 - 2,1	0,3(0,5)			
700/600-	Sect. C, C	o1. 4-5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed  Control rod  travel  mm  2	t rev/min  Control rod  travel  mm rev/min  3	Interme	diate rated	speed	Control lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	3 To	rque control Control rod travel mm
ca.42	1060 1100 1150	12,0 8,8 3,7		without auxilians spring with auxiliary spring			375 170	6,1 19 <b>-</b> 21	1050	0
<b>2</b> a	1	ca. 11,0 ca. 3,9 0,3-1,0					375 485 560	5,0-6,2 ca. 2,0 0 - 1	400	0,7-1,1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp 40°C (104°F)	6 Rotational- speed limitat		uel delivery naracteristics	Starting t	fuel delivery 5	(4a) Idi	e stop
rev/min	cm <sup>3</sup> /1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>9</sup> /1000 strokes 7	rev/min	Control rod travel mm
1050	139,0-141,0 (138,2-141,7)	1090-1100* (1085-1105)		151,0-155,0 (150,5-155,5)	100	133-139 (131-141)	375	6,1
			1175	max. 154,0 (max. 156,0) 11,5- 17,5 ( 9,5- 19,5)	375	17,5-21,5 (16,5-22,5		
		dis	persi					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.76

Geschaftsbereich KH. Kungendienst. No. Ausrustung ₹ 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

WPP 001/4

1. Edition

PES 6 A 100 D 420 LS3024

EP/RSV 375-1100 A2 B798DR

supersedes

company

Case A 504 BDT

engine Pay attention to special setting as per W 400/307 for Case CO.!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15)

Rotational speed	travel	Fuel delivery cm¥100 strokes	Difference cm³/ 100 strokes	travel	Fuel delivery cm <sup>9</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
rev/min		cma lou shokes	4	mm 2	2	6
1	2	3	4	2	3	0
1100	10,8-10,9	12,6-12,8	0,3(0,6)			:
375	5,9-6,1	1,7- 2,1	0,3(0,5)			
750/600		C, col.4-5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm	Control rod travel mm rev/min	Interm	ediate rati	ed speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	1(3)	rque control Control rod travel mm
loose	800 x	0,3-1,0 = 4,2				ca.22	375 100 375	5,5 min.19 5,9-6,1	1100 750	10,8-10,9 11,5-11,7
ca.43	1210-1	150 =9,8 220 =4,0 ,3-1,7					450-520 650	= 2,0 0 - 1	600	11,7-11,8

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Fu	ill-load stop	6 Rotational- speed limitat	11381	iel delivery	Starting f	uel delivery 5	4a Idle stop		
Test oil temp 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note changed to ) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>9</sup> /1000 strokes 7	1	Control rod travel mm	
1100	126,0-128,0 (125,0-129,0)	1140-1150*	750 600	134,0-138,0 (133,5-138,5) 129,0-137,0 (128,5-137,5)	100 375 1225	133-139 (130-142) 17,5-21,5 (14,5-24,5) 13,5-19,5 (11,5-21,5)	dispe	rsion max.	

Checking values in brackets

\* 1 mm less control rod travel than col 2

40

WPP 001/4 HOR 2,4 a

1. Edition

En

PES 3 A 80 D 410/3 RS 1336

RSV 400-1250 A0B 1123 L

supersedes =

company engine Holder VD 6001-4 tractor A 60

1 - 2 - 3 je  $120^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

1,7 - 1,8 Port closing at prestroke (1,65-1,85)

mm (from BDC)

RW 9 mm

## estoil-ISO 4113

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)		
rev/min	mm <b>(2)</b>	cm³¥100 strokes	cm3/ 100 strokes	mm	cm³/100 strokes	mm		
1	2	3	4	2	3	6		
1230	11,0+0,1	7,0-7,1	0,2(0,35)					
400	8,2-8,4	0,9-1,5	0,2(0,3)					
1	1 -	ence between co	1					

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed		Interme	diate rated	speed	(4)		rated speed	3 Torque control		
Degree of deflection of control	Control rod travel mm	Control rod travel mm rev/min				Control- lever deflection	rev/min	Control rod travel mm		Control rod travel mm	
lever 1	2	3	4 .	5	6	in degrees 7	8	9	10	11	
loose	800	0,3-1,0	-	-	_	ca.24	400	7,8	-	-	
10030	x =	4,25					100 400	min.19,0 8,2-8,4			
ca.50	10,0 4,0 1500	1270-1280 1335-1365 0,3-1,7					565-625 675			:	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

20	emp 40°C (104°F)	Rotational- speed limitat Note changed to ) rev/min		ei delivery aracteristics cm <sup>3</sup> /1000 strokes	Starting for Idle rev/min	cm <sup>9</sup> /1000 strokes		Control rod travel mm
1230	70,0-71,0 (68,5-72,5)	1270-1280*	-	-	100	19,0-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# **Testoil-ISO 4113**

#### **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 2. Edition

En

PES 6 A 100 D 410 RS3025

EP/RSV 400-1100 A2 B765DL

supersedes =

Test-pressure line 6 x 2 x 600

400-1050 A2 B786DL

John Deere company 6404 A engine

Inlet pressure 1.5 bar

Manifold-pressure compensator (LDA) adjustment page 2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,00-2,10 Port closing at prestroke (1,95-2,05) Port closing mark cyl. 1: 14° after port closing mm (from BDC)

Rotational speed rev/min 1	Control rod travel	Fuel delivery with 765 DL cm <sup>3</sup> /100 strokes	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery With 786 DL cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,2	11,2 - 11,4	0,3(0,6)	1050-11,0	= 11,2-11,4	
	(+0,1)			(+	0,1)	
400 750/550-	6,3 (±0,1) Sect. C,	1,1 - 1,5 col. 4-5	0,3(0,5) 0,4(0,7)	6,5 (±0,1)	1,1 - 1,5	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

400-1100 A2B765DL

1 Uppe	r rated speed		Intermed	tiate rated	speed	<b>(4)</b>		rated speed	3 Torque control		
Degree of deflection of control lever	travel mm	Control rod travel mm rev/min	•			Control- lever deflection in degrees	rev/miñ	Control rod travel mm	rev/min	Control rod travel ,1)	
<u> </u>	2	3	4 .	5	6	<u> </u>	8	9	10	11	
ca.43	1100	10,8-10,9				ca.21	400	6,3			
	1140 - 1195 -	1150=9,8 1205=4,0	witho	out au	xilia	y sprin	9 200 400	min. 19 6,2-6,4	1100 750	10,8 11,6	
	1155	9,8 -9,9					480-535	= 2,0	500	11,8	
<b>2</b> a	1200 1300	ca. 4,0 0,3-1,7	with	auxi1	iary	spring	580	0 - 1			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	emp 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Rotational- speed limitat Note changed to ) rev/min		el delivery aracteristics cm <sup>3</sup> /1000 strokes 5	Starting to tidle	cm <sup>4</sup> /1000 strokes	•	rev/min Control rod	
LDA 1100	0,8 bar 112,0-114,0	1140-1150* (1135-1155)	LDA 750 LDA 550	0,8 bar 121,5-124,5 0 bar 63,0-69,0	100 400 1200	156 - 176 11,5-15,5 18,5-28,5		6,3	

Checking values in brackets see page 2 \* 1 mm less control rod travel than col 2

#### **B. Governor Settings**

400-1050 A2B786DL

1	r rated speed Control rod travel mm		Intermed	diate rated		Control- lever- deflection in degrees 7	Lower rev/min 8	rated speed   Control rod   travel   mm   9	3 To	rque control  Control rod  rayel  +U,1)  mm ,1)
ca.43		11,0-11,1 1100=10,0 1165= 4,0		out au	uxilia	c.22 ry	400 200	6,5 mind.19	1050 900	11,0
29	1095 1160 1240	10,0-10,1 ca. 4,0 0,3-1,7	,	auxi	liary		400 480-530 570	6,4-6,6 = 2,0 0-1	750	11,2 12,0

#### C. Settings for Fuel Injection Pump with Fitted Governor

	uil-load stop emp. 40°C (104°F)	6 Rotational- speed limitat		uel delivery naracteristics	Starting !dle	fuel delivery 5 de Idle stop		
rev/min	cm <sup>3</sup> /1000 strokes 2	changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
LDA 1050	1,0 bar 112,0-114,0	1090-1100* (1085-1105)	LDA 750 LDA 550	1,0 bar 121,5-124,5 0 bar 48,0- 54,0	100 400 1150	156-176 11,5-15,5 18,5-28,5	400	6,5

Checking values in brackets

estoil-ISO 4113

\* 1 mm less control rod travel than col. 2

$$(1050 = 110, 0-116, 0)$$

$$(750 = 119,5-126,5)$$
  
 $(550 = 46,0-56,0)$ 

D. Adjustment Test for Manifold Pressure Compensator

Preliminary adjustment, dimension H = 21,8 mm rev/min decreasing pressure - in bar gauge pressure

Test at n = 550 Pre l 1 m 1 nd rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
3025 mit 765DL	0,63	0,15	-0,1-0,2 -2,5-2,6
3025 mit 786DL	0,72	0,38	-0,9-1,1 -2,9-3,0
Switching point (hydr. measurement)	max. 0,76	mind. 0,48	10 - 11 mm RW 19 - 21 mm RW

Notes:

(1) when n :

rev/min and

bar ( = maximum full-load control rod travel)

En

$$(750 = 119,5-125,5)$$
  
 $(550 = 61,0-71,0)$ 

#### **Test Specifications** Fuel Injection Pumps (A) WPP 001/4 HAN 10,8 c and Governors

4. Edition

PE 6 A 100 D 320 RS 3022

EP/RSV 350-1100 A4 B 1070R (1) supersedes 12.78

350-1100 A8 B 1070R (2)

MF-Hanomag

D 963 A2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

1,80-190 (1,75-1,95)

mm (from BDC) Difference between CRT9 + 21  $5.5-6.5^{\circ}$ 

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm¥100 strokes 3	cm <sup>3</sup> / 100 strokes -4	mm 2	cm³/100 strokes	mm 6
1000	9	10,5 - 11,1	0,5			
	6	3,4 - 4,6				
	12	15,6 - 17,0				
200	9	7,2 - 8,4				

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

A4 ... (1)

Degree of deflection of control lever	r rated speed   Control rod   travel   mm   2		Intermed	diate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	9	rque control   Control rod   travel   mm
ca.70	1100 1140 1170	16,0 12,2 7,8	without auxiliar			ca.30 y spring		7,4	1100	0
29	1150 1250 1320	9,2-11,6 1,2-4,1 0,3-1,5	with	auxil	iary s	pring	100 350 500 560	19-21 7,6-8,2 2,5-5,0 0 -1,5	350	0,2-0,8

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	emp 40°C (104°F)	Rotational- speed limitat	Fuel delivery characteristics Idle			uei delivery 5	Idle stop	
rev/min	cm <b>3</b> /1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>9</sup> /1000 strokes 7	rev/min 8	travel mm 9
(1) 1100	150,0-152,0 (148,0-154,0)	1130-1140*			100	19-21mmRW		
								./.

Checking values in brackets

\* 1 mm less control rod travel than col 2

4.79

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#### **B.** Governor Settings

A8 ... (2)

Degree of deflection of control lever	r rated speed Control rod travel mm 2		Intermed	liate rated		Control- lever -deflection in degrees 7		rated speed Control rod travel mm	I( 3 )	rque control   Control rod   travel   mm   11
loose	800 x	0,3-1,0 5,5				ca.24	350 100 350	5,5 min. 19 5,9-6,1		11,5-11,6 12,7-13,3
ca.56	10,5 4,0 1360	1140-1150 1190-1220 0,3 - 1,7			-			= 2,0 0-1		

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	Rotational- speed limitat		el delivery aracteristics	Starting f	uel delivery 5	da idle stop	
rev/min	crm <sup>3</sup> /1000 strokes 2	changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm 9
(2) 1100	150,0-152,0 (148,0-154,0)	1140-1150*		·	100	19-21mmRW		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### D. Adjustment Test for Manifold Pressure Compensator

Test at n =

Testoil-ISO 4113

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
ł			
<i>t</i> .			

Notes:

(1) when n =

rev/min and gauge pressure = bar ( = maximum full-load control rod travel)

VDT-WPP 001/4

2. Edition

PES 6 A 100 D 420 LS3007 LS3024

EP/RSV .. 569DR, 696DR, 724 DR EP/RSV .. 696DR, 724DR

supersed∈s company

12.74 Case

Test with case overflow valve!

Governors 569 and 724 in accordance with special setting!

A 504 BDT engine A 504 BDT1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1

mm (from BDC)

Rotational speed rev/min	Control rod travel	Fuel delivery cm¥100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>9</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	9,1 - 9,8	0,5			
	6	3,6 - 4,8				
	12	13,6 -14,9				
200	9	5,2 - 6,8				

Adjust the fuel delivery from each outlet according to the values in E

#### **B. Governor Settings**

696 DR

1 Uppe	r rated speed		Interme	diate ra	ited speed	4	Lower	rated speed	3 to	rque control I Control rod
Degree of deflection of control lever	travel mm	travel mm rev/min				Control- lever deflection in degrees	rev/min	travel mm	rev/min	travel mm
1	2	3	4 .	5	6	7	8	9	10	11
ca.58	885	13,6	<b>1</b>			ca.30	375	8,0		
	930 960	6,8 1,8	with spri		uxiliar	y I	100 375	19-21 7,7-8,3	875 350	0 0,2-0,8
	930	6,3-8,0					450	2,0-4,7	330	0,2-0,0
<b>2</b> a	960 1030	2,5-5,3 0,3-1,0	with spri		ıliary		550			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp 40°C (104°F)	Rotational- speed limitat	33 Fu	el delivery aracteristics	Starting ! Idle	uel delivery 5	Idle stop	
rev/min	cm³/1000 strokes 2	changed to ) rev/min	rev/min 4	cm <sup>9</sup> /1000 strakes 5	rev/min	cm <sup>9</sup> /1000 strokes 7	rev/min 8	travel mm 9
875	146,5 - 149,5	880-895	900	101,0-131,0	100	131,0-141,0	375	16,5- 22,5
			940 ॢ	12,5-20,5				./.

Checking values in brackets

\* 1 mm less control rod travel than col 2

#### **B. Governor Settings**

708	$\sigma$
1/4	1 IK

	r rated speed Control rod travel mm		Intermed	liate rated	speed 6	Control- lever deflection in degrees 7	- Lower rev/min 8	rated speed Control rod travel mm		rque control Control rod travel mm
ca.42	1120 1180 1210	12,8 6,3 2,5	witho	out au	xiliaı	ca.20 y spring	375 150 375	6,0 18-21 5,7-6,3	1100	0
20	1140 1200 1280	12,6-13,3 4,8- 6,5 0,3- 1,0	with	au.		l ring	450 550	1,9-3,8 0 - 1	500	0,1-0,4

#### C. Settings for Fuel Injection Pump with Fitted Governor

	il-load stop emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Rotational- speed limitat. Note: changed to) rev/min 3		el delivery aracteristics cm <sup>2</sup> /1000 strokes 5	Starting fuel delivery 5 Idle rev/min cm³/1000 strokes 7		Idle stop  Control rod travel mm  8 9	
1100	152,5-155,5	1140-1155	700 600 1225	156,0-160,0 max. 159,0 12,5- 20,5	100	131,0-141,0	375	16,5- 22,5

Checking values in brackets

Testoil-ISO 4113

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

11 1 1	rated speed Control rod travel mm	rev/min  Control rod  travel  mm rev/min  3	Interme	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm 9		rque control Control rod travel mm
ca.41	1120 1150 1180	9,3 6,0 3,2	with	out aux	xilian	ca.19 y sprinc	375 150 375	5,7 19,0-21,0 5,4- 6,0		0
29	1140 1200 1260	9,0-9,8 2,8-4,0 0,3-1,0	with	auxil	iary :	pring	450 550	1,6-3,5 0 -1,0	500	0,1-0,4

#### C. Settings for Fuel Injection Pump with Fitted Governor

	II-load stop	Rotational-speed limitat. 3a Fuel delivery characteristics			Starting fuel delivery 5			4a Idle stop		
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes 1		Note: changed to) rev/min 3	rev/min cm³/1000 strokes 4 5		rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm 9		
1080	91,0- 93,0	1110-1125	800 700	91,5-94,5 max. 94,5	100	131,0-141,0	375	16,5- 22,5		
			1200	14,5-22,5						

\* 1 mm less control rod travel than col. 2

#### Notes on special setting

Test sequence

(h)

Run pump at 100 min-1 below rated speed and vent damper. (With version 2 at vent screw, with versions 1 and 3 by loosening damper bushing. Then tighten damper bushing again and with version 2 ensure that centre-punch mark on screw plug faces upwards). Switch off test bench.

Set projection of injected-quantity stop with respect to stop plate (dimension "a").

#### Set idle before full-load speed regulation!

Remove fixing element for dimension "b".

Set idle stop screw (dimension "c").

Screw back stop screw of injected-quantity lever.

Limit travel of stop pin (dimension "b") using for example feeler gauge

EFEP 429-1 687 970 019 and place injected-quantity lever in position

with fitted cylindrical helical coiled spring.

Set idle delivery at speed-regulating throttle.

Then place speed-control lever in position such that it makes contact with idle stop.

(In doing so, do not turn speed-regulating throttle, but rather, if necessary, adjust speed-control lever after loosening clamping screw at bracket).

Set low-idle speed regulation. (b)
Position stop screw of injected-quantity lever at lugs of speed-control lever.
Remove fixing element for dimension "b".

Test starting fuel delivery. (c)

Set speed regulation at maximum—speed stop screw. (d)

Set full-load delivery. Correct by adjusting injected-quantity stop. (e)
If full-load delivery has been altered, check (a), (b) and (d) again.

Tests as per Section B. (f)

Test deliveries as per Section C. (g)

Perform check measurement.

To do so, limit dimension "b" again (see above) and place injected-quantity lever in position with fitted cylindrical helical coiled spring. If necessary, correct quantity within tolerance of dimension "b".

Then position speed-control lever at idle stop screw and, if necessary, adjust stop screw of injected-quantity lever.

Perform stop check. (1)

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WPP 001/4
1. Edition

PES 6 A 100 D 410 RS3025Z E

RS3025Z EP/RSV 400-1100 A2B765DL RS 3025 EP/RSV 400-1100 A2B766DL RS 3025 EP/RSV 400-1100 A7B767 L

supersed€s

company engine John Deere 6404 A

Test-pressure line 6 x 2 x 600

Inlet pressure 1.5 bar

Manifold-pressure compensator (LDA) adjustment page 3! All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 2,0+0,1(+0,15)

mm (from BDC)

Port closing mark 14 ° after port closing.

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cmil/100 strokes	cm³/ 100 strokes 4	mm 2	cm³/100 strokes 3	mm 6
1000	9	7,6 - 8,3	0,5			
	6	3,2 - 4,2				
	12	12,2 -13,5				
200	9	4,0 - 5,2				

Adjust the fuel delivery from each outlet according to the values in

400-1100 A2B765DL mit 3025Z

#### **B.** Governor Settings

**Testoil-ISO 4113** 

14 1 7	r rated speed Control rod travel mm		Intermed	diate rated	speed	Control- lever deflection in degrees 7	Lowe rev/min 8	r rated speed   Control rod   travel   mm   9	1(3)	rque control Control rod travel mm
ca.43	1060 1145 1200	16,0 9,5 4,5	witho	out aux	kiliar	ca.21 y spring		6,3 19 - 21 6,0-6,6	1100 500	0,4-0,7
<b>2a</b>	1100 1200 1250	ca.10,5 ca. 4,5 0,3-1,0					450 560	3,7-4,8 0 - 1		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop Test oil temp 40°C (104°F) rev/min cm³/1000 strokes		Rotational- speed limitat Note changed to ) rev/min	characteristics			cm <sup>\$</sup> /1000 strokes	•	Control rod travel mm
	0,8 bar 107,5-109,5	1140-1150* (1135-1155)	LDA 750 LDA 550	0,8 bar 118,5-121,5 0 bar 53,0-59,0	100 400 1200	156,0-176,0 11,5-15,5 20,5-26,5	400	6,3
(inrea	se by : 2,0 cm <sup>3</sup>	!)						

Checking values in brackets

\* 1 mm less control rod travel than col 2

9.76

BOSCH

#### **B. Governor Settings**

	rated speed Control rod travel mm		Intermed	iate rated	speed	Control- lever deflection in degrees 7	- Lower rev/min 8	rated speed  Control rod  travel  mm  9	9	rque control Control rod travel mm
ca.43	1060 1145 1200	16,0 9,3 4,3	with	out au	xilia	ca.21 ry sprin	400 200 400	19 - 21 6,0-6,6	1100 500	0 1,7-1,9
28	1100 1200 1270	ca.10,4 ca. 4,3 0,3-1,0	with	auxil	liary	spring	500 580	0,4-3,2		

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> Full-load stop		6 Rotational- speed limitat		el delivery aracteristics	Starting f	Starting fuel delivery 5 da Idle		
rev/min	emp. 40°C (104°F) cm³/1000 strokes	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	travel mm 9
LDA 1100	0,8 bar 107,0-109,0	1140-1150* (1135-1155)	LDA 500	0,8 bar 122,5-125,5	100 400 1200	156,0-176,0 11,5-15,5 18,5-28,5	400	6,3
(inre	ase by · 2,0 cm	³!)						

Checking values in brackets

Testoil-ISO 4113

\* 1 mm less control rod travel than col. 2

#### **B.** Governor Settings

11 1 /	r rated speed Control rod travel mm		Intermed	tiate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	1 3 1	rque control Control rod travel mm
ca.72	1070 1100 1150	16,0 11,6 4,2	witho	out aux	xil ia:	ca.30 y sprin	400 150 400	6,3 19 - 21 6,0-6,6		
29	1080 1120 1180	ca. 10,6 7,0- 9,6 0,3- 1,0	with	auxil	iary :	pring	450 500	1,7~3,7		i

#### C. Settings for Fuel Injection Pump with Fitted Governor

Test oil te	l	C (104°F) Speed iimitat.  Note: changed to)				Starting fuel delivery 5		Control rod travel
rev/min	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	6	7	8	9
1080	112.0-114,0	1110-1120* (1105-1125)			100 400	156,0-176,0 11,5-15,5	400	6,3
				•	1150	11,5-21,5		
(inr	ease by 2,0 cm³)							

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### D. Adjustment Test for Manifold Pressure Compensator

Test at n =

rev/min decreasing pressure – in bar gauge pressure XXXXXXXXX

	$\mathbf{m}$
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- 1	4
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Pump/governor	Setting	Measurement	diminution , Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
3025Z with 765DL	0,62	0,11	-0,1-0,2 -3,0-3,3
3025 with 766DL	0,55	0,11	-0,1-0,2 -2,6-2,8
3025 with 767 L	without	LDA	
Switching point (hydr. measurement)	max. 0,76	mind. 0,48	10 - 11 mm RW 19 - 21 mm RW

Notes.

(1) when n =

rev/min and gauge pressure = bar (\* maximum full-load control rod travel)

Preliminary adjustment, dimension H = 21.8 mm

40

WPP 001/4
1. Edition

En

PES6A100D 420LS3024

RSV375-1100A2B763DR

supersedes "

company case

engine A504 BDTI

Port closing at prestroke

$$0 -60 -120 -180 -240 -300 \pm 0,50 (0,75)$$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,00-2,10

(1,95-2,15)

mm (from BDC)

# Festoil-ISO 4113

Rotational speed rev/min	Control rod travel	Fuel delivery cm3/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery  cm <sup>9</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	9	9,2 - 9,8	0,6			
	6 12	3,8 - 4,8 13,9 - 14,9				
200	6 9	0,5 - 1,5 5,4 - 6,8				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 1	r rated speed Control rod travel mm		Interme	diate rated	speed	Control- lever deflection in degrees		rated speed Control rod travel mm	9	rque control Control rod travel mm
1	1100	10.0	4 .	5	6	7	8	9	10	11
ca.43	1100 1160 1220	10,8 7,3 1,2	with	out au	xilia	ca.22 ry sprin	r 150	6,0 19-21	1100 500	0 0,1-0,4
<b>2a</b>	1200 4	a. 10,8 ,7- 6,0 ,3- 1,0	with	auxil	liary	spring	375 450 560	5,7-6,3 2,7-4,1 0-1		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	Rotational- speed limitat	11001	iel delivery iaracteristics						
Test oil temp 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm\$1000 strokes	rev/min 8	Control rod travel mm 9		
1100	158,0 - 160,0 (157,0 - 161,0)	1140-1150*	700 600 1225	161,0-165,0 (158,5-167,5) max. 164,0 13,5- 19,5	100	133-139	375	17,5- 21,5		

Checking values in brackets

\* 1 mm less control rod travel than col 2

1.80

**BOSCH** 

Geschaftsbereich KH Kundendienst Ktz-Ausrustung 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

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WPP 001/4 KHD 1 n 7 1. Edition

En

PE 8 A 95 D 410 LS 2451 RQV 1150 AB 1041 L

supersedes

company: KHD

engine F 8 L 413 F

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Control rod

10,0+0,1

5,9-6,1

Port closing at prestroke (1.95-2.15) mm (from BDC

Fuel delivery

cm<sup>3</sup>/100 strokes

8,7 - 8,9

0.9 - 1.4

 mm (from BDC)			
Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
 4	2	3	6
0,3(0,6)			
0,3(0,5)			
1 '	1	i .	1 :

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Rotational speed

1100

300

rev/min

	Upper rated speed				Intermediate	rated sp	eed		Lower rated	speed	Silding sleeve travel		
	deflection of control	rev/min Control rod travel	mm.		Degree of deflection of control		Control rod travel	_	Degree of deflection of control		Control rod travel	Slicings	i Tavel
1	laver 1	unu .	rev/min (	2 <b>a</b> )		rev/min		4)	lever	rev/min	mm 3	rev/min	mm
ŀ	<u> </u>	-	3		4	5	6		7	8	9	10	11
	-	9,0	1150-11	55	-	-	-		_	-	-		
		4,5	1185-11	95							ĺ		
1		1250	0 - 1	,0								ı	
İ									_				
L									<b>3</b> a				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel deliv	very characte.istics 5a	Starting idle switchin		Torque- travei	control 5
rev/min 1	cm³/1000 strokes	rev/min 4a) 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 8	travel mm
1100	85,5-87,5 (83,5-89,5)	-	-	-	100	119,0-129,0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

40

WPP 001/4 IHC 7,6b
2. Edition

En

PES 6 MW 100/320 RS 1504 RSV 350 ... 1200 MW 2/306 R supersedes company IHC engine DT 466

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

3,20-3,30 Port closing at prestroke (3,15-3,35)

mm (from BDC)

10,5 mm RW

Rotational speed	Control rod travel	Fuel delivery	Difference cm³/	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cmi¥100 strokes	100 strokes	mm 2	cm³/100 strokes	mm 6
1	10.2	3		-	3	•
1200	$7,4^{+0},2$	6,5-6,7	0,3(0,5)			
350	5,7-5,9	1,8-2,2	0,3(0,5)			
1000			0,3(0,5)			
800			0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Testoil-ISO 4113

Degree of deflection of control lever	Control rod   Control rod travel   mm   rev/min   2   3		Interme	Intermediate rated speed 4 5 6			Lower rated speed Control rod travel mm 8 9		1(3)	rque control   Control rod   travel   mm
loose	800 = 0,3-1,0 1250-1260=6,5 1310-1340=3,1 1450= 0,3 - 1,7						350 100	5,8 min.19	1100 1000	7,5-7,7 8,1-8,3
ca.60							350 430-490	5,7-5,9 = 2,0	800 500	8,6-8,8 8,7-8,9

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Fu	ili-load stop	6 Rotational- speed limitat				fuel delivery (5)	(4a) Idle stop		
Test oil to rev/min 1	emp 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>9</sup> /1000 strokes 7 .	rev/min 8	Control rod travel mm 9	
1200	65,0-67,0 (64,0-68,0)	1250-1260*	1000 800	72,0-74,0 (71,0-75,0) 78,0-80,0 (77,0-81,0)	100 350 1325	min. 140 18,0-22,0 (17,0-23,0) 24,0-36,0 (23,0-37,0)		5,8	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.80

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

2. Edition

PES 6 MW 100/320 RS 1504 RSV 350 ... 1250 MW 2/305 R supersedes\* company IHC DT 466

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

3,20-3,30 (3,15-3,35)

mm (from BDC)

10,5 mm RW

Control rod travel	Fuel delivery	Difference cm³/ 100 strokes	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
7 3+0,2	<u></u>	0.3(0.5)	2		6
5,5-5,7	1,8-2,2	0,3(0,5)			
		0,3(0,5)			
		0,3(0,5)			
	mm 2 7,3 <sup>+0</sup> ,2	travel mm 2 cm³/100 strokes 3	travel mm 2 cm²/100 strokes 2 100 strokes 4 100 strokes 4 1,8-2,2 0,3(0,5) 0,3(0,5) 0,3(0,5)	travel mm 2 cm³/100 strokes cm³/100 strokes 4 cm³/100 strokes mm 2  7,3 <sup>+0</sup> ,2 0,3(0,5)  5,5-5,7 1,8-2,2 0,3(0,5) 0,3(0,5)	travel

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed   Control rod   travel   mm   2		Intermed	diate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	<b>9</b>	rque control Control rod travel mm
loose	800	0,3-1,0				ca.32	350 100	5,6 min.19	1100 1000	7,3-7,9 7,8-8,0
ca.60	1300-13 1360-13 1450=0,	190=3,1					350 430-490	5,5-5,7 = 2,0	800 500	8,5-8,7 8,6-8,8

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Fu	II-load stop	Rotational- speed limitat				Starting fuel delivery 5 4a Idle stop			
Test oil temp 40°C (104°F) rev/min cm³/1000 strokes		Note changed to ) rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>9</sup> /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1250	69,0-71,0 (68,0-72,0)	1300-1310*	1000 800	76,0-78,0 (75,0-79,0) 82,5-84,5 (81,5-85,5)	100 350 1375	min.140 18,0-22,0 (17,0-23,0) 25,0-37,0 (24,0-38,0)		5,6	
			800	(81,5-85,5)	1375				

Checking values in brackets

\* 1 mm less control rod travel than col 2

3.80

Geschaftsbereich KM. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

## stoil-ISO 4113

#### Test Specifications Fuel Injection Pumps and Governors

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WPP 001/4 DAF 8,3d

1. Edition

En

PE 6 MW 90/720 RS 6 RWV 300-1200 MW 8 0 403 346 002

company DAF engine DH 825 151 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,00-2,10 (1,95-2,15)

mm (from BDC)

10,5

Control rod travel

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm 1/100 strokes	cm <sup>4</sup> /100 strokes	mm	cm 1/100 strokes	mm
1	2	3	4	2	3	6
1000	9,4+0,2	7,2-7,4	0,35(0,6)			
300	5,7-6,1	0,8-1,2	0,35(0,55)			
800	9,6+9,8		0,5 (0,7)			
					1	

Set uniform delivery according to the values in

Checking values in brackets

#### **B.** Governor Settings

Lower rated spe Degree of deflection		Rotational speed	Upper rated Degree of deflection	1		Rotational speed	Variations in co		el Control rod travel
of control lever	mm	rev/min	of control lever	- }	mm 5	rev/min	7	revimin B	9 9
	5,7	150-200 280-320 tact 320	82 (	78991	8,5 4,3 0	1240-1250 1260-1320 1320-1380	(12) (13) (14) (6)	1000	20,5-21,5 9,1- 9,5 9,4- 9,8

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load d	elivery (19)	Full-load speed (8a)	Variations delivery	in fuel 17	Starting ful	iel delivery	D.#
Test oil ter	np 40°C (104°F)		rev/min	(18) cm 1/1000 strakes	rev/min		Difference cm <sup>3</sup> /1000 strakes
1	2	3	4	5	6	7	8
1000	72,9-74,9 (70,9-76,9)	1240-1250 (1235-1255)	800	72,3-76,3 (70,3-78,3)	100 300		(23)
						(6,3-15,3)	(15)
							(16)

Checking values in brackets

less control rod travel than in Column 2

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany. Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH. estoil-ISO 4113

#### **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 5,7 u 6. Edition

PES 6 A 90 D 410 RS 2569 RQV 300-1400 AB 1065 DL (1) ROV 300-1400 AB 1077 DL (2) supersedes 10.80

company: Daimler-Benz

OM 352

96 kW (130 PS)

Set the stop screw to control-rod travel 3 - 3,5 mm.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,1+0,1	5,9-6,0	0,3(0,45)			
300	8,4-8,6	1,0-1,6	0,2(0,4)			
500	11,3+0,1	C, Sp.4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding sleeve travel	
deflection	rev/min Control	Control rod (18)	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		
lever	rod travel mm	rev/min (28)	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1500	15,2-17,8	-	-	-	ca.21	100	min.10,0		1,1
] }	1630	0 - 1,0					300 550-6	18,4-8,6 10 = 2,0	670 1450	3,9-4,1 8,0
ca.65		1440-1450 1530-1560								
	7,0	1330 1300				<b>3</b> a				

Torque control travel a = 1,2

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		Rotational-speed 2b timitation intermediate speed	Fuel deliv	rery characteristics 5a speed 5b	Starting Idle switching		Torque- travel	control 5
rev/min 1	cm³/1000 strokes	rev/min 48 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm +0,1
1400	59,5-60,5 (57,5-62,5)	1440-1450*	500	51,5-54,5 (49,5-56,5)	100 100-	72,25-82,25 14,4 - 15,0 mm RW 220 (80-240)	1000 630	10,1 10,6 11,1 11,3

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10.81

**B. Governor Settings** 

Upper rated sp	eed			Intermediate	rated spe	ed	Lower rated	speed		Sliding sleeve travel	
deflection	Control	Control rod travel	(la)	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		1
	rodtravel mm	mm rev/min	(2a)	of control lever	rev/min	mm 4	of control lever	rev/min	mm ③	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	1400	15,2-17	,8	•	-	-	ca.12	100	min.7,1	300	1,1-1,4
	1700	0 - 1						300 540	5,5-5,7 -600 =2,0	800	4,3-4,6
ca.60		1440-14						700	0 - 1	1400	8,1
	4,0	1550-15	80								
							(3a)				
					<u> </u>	<u></u>	$\sim$	<u> </u>		<u> </u>	

Torque control travel a 0,35 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) 2		Rotational-speed (2b) Ilmitation Intermediate speed	Fuel delivery characteristics 5a high idle speed 5b			fuel delivery 6	Torque- travel	control 5
rev/min	cm <sup>4</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	cm /1000 strokes	rev/min B	travel mm 9
1440	61,5-62,5 (59,5-64,5)	705-720 (ZDA)**	1000	59,5-61,5 (57,5-63,5) 53,0-56,0 (51,0-58,0)	100	12,2-12,8	400 920 755 500	10,6 10,8 10,9 10,9
		(20,1)		(61,600,00,00,00,00,00,00,00,00,00,00,00,00		· · · · · · · · · · · · · · · · · · ·		

Checking values in brackets

\*\* intermediate speed stop

\* 1 mm less control rod travel than col 2

#### **B. Governor Settings**

Upper rated s	speed			Intermediate	rated spe	ed	Lower rated	speed		Sliding s	eeve travel
		Control rod travel	(1a)	Degree of deflection		Control rod travel	Degree of deflection	l	Control rod travel		0
of control lever	rod travel	mm rev/min	(2a)	of control lever	rev/min	mm 4	of control lever	rev/min	mm 3	rev/min	mm
1,	2	3	_	4	5	6	7	8	9	10	11
							39				

Torque control travel a -

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (2b) Ilmitation Intermediate speed (4a)	Fuel defiv high idle s	very characteristics 5a	switchin	ng point	Torque- travel	Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm 1/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

1 mm less control rod travel than cot 2

#### 3

## Test Specifications Fuel Injection Pumps (3) and Governors

VDT-WPP 001/4 MB 2,2 f 3. Edition

PES 4 M 55 C 320 RS 60

EP/MN 60 M 44 DR EP/MN 60 M 50 DR supersedes 10.75
Daimler-Benz
company: OM 615
engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,70-1,80 (1,65-1,85) mm (from BDC)

max. RW

estoil-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery  cm³/100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 5	Fuel delivery  cm <sup>3</sup> /100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2250	13,2	3,5 - 3,7	0,2(0,25)			
250	(+0,1) 9,1 (±0,1)	0,4 - 1,0	0,15(0,2)		,	
1600 1000)		col.4-6	0,25(0,3)	ļ		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

	Leakage		limitation breakaway*				Auxiliary spring auxiliary cam**		Torque control	
Torque control travel		Time at least		Control rod travel	Vacuum	Control rod travel	Vacuum	Control rod travel	Vacuum	Control rod travel
mm	mm water col	s	mmw.c.	mm	mmw.c.	mm	mmw.c.	mm	mmw.c.	mm
1	2	3	4	5	6	7	8	9	10	11
1,1±0,1	500-480	10	470 490-	13,2 510*	510 550	7,7-13,2 2,2- 9,3	550 650	10,0-10,8 9,1-10,0		14,3-14,4 14,0-14,3 13,4-13,7 13,2-13,3
= rotational sp adjust breakay	ontrol rod travel test (cols. 4~11) rotational speed 500 rev/min idjust breakaway (cols. 4~5) by means of shims* cam adjustment (B 8~9 ~ C 7~8) by means of shims**								470	13,2-13,3

#### C. Settings for Fuel Injection Pump with Fitted Governor

	Full-load stop screw Test oil temp 40°C (104°F)			ery character	estics	idle (stoj idle (imb		Control road travel from full-load to
rev/min	Vacuum mm wat col. 2	cm³/1000 strokes 3	rev/min	Vacuum mm wat. col 5	cm <sup>3</sup> /1000 strokes	rev/min	Vacuum mm wat. col.	mm cm <sup>3</sup> /1000 strokes 8
2250	470	35,7-36,7 (34,7-37,7)	1600 1000	325 135	36,5-37,9 (35,5-38,9) 34,2-35,7 (33,2-36,7)	500 250	525 760	2,2 - 3,2 4,5 -10,5

Checking values in brackets

11.76

40

VDT-WPP 001/4 MB 2.2 g 1. Edition

PES 4 M 55 C 320 RS 60 EP/MN 60 M 48 D

supersedescompany: Daimler-Benz
OM 615
( Sweden )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,70-1,80 (1,65-1,85)

mm (from BDC)

max. RW

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 5	Fuel delivery cm <sup>3</sup> /100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2250	12,9	3,4 - 3,6	0,2(0,25)			
250	(+0,1) 9,1 (±0,1)	0,4 - 1,0	0,15(0,2)			
1600) 1000)	Sect.C,	col.4-6	0,25(0,3			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

	Leakage		Control-rod travel limitation breakaway*				Auxiliary spring auxiliary cam**		Torque control	
Torque control travel		Time at least		Control rod travel		Control rod travel		Control rod travei		Control rod travel
mm	mm water col.	s	mmw.c	mm	mmw.c.	mm	mmw.c.	mm	mmw.c.	mm
1	2	3	4	5	6	7	8	9	10	11
0,8+0,1	500-480	10	470	12,9	510 550	7,8-13,0 2,2- 9,0	550 700	9,7-10,7 8,6- 9,6	350	13,8-13,9 13,3-13,7 12,9-13,0
control rod travel test (cols. 4-11) = rotational speed 500 rev/min. adjust breakaway (cols. 4-5) by means of shims* cam adjustment (8 8-9 - C 7-8) by means of shims*										

#### C. Settings for Fuel Injection Pump with Fitted Governor

	Full-load stop screw Test oil temp 40°C (104°F)			ery characteri	stics	idle (stop idle (imb		Control road travel from full-load to	
rev/min	Vacuum mm wat. col 2	cm³/1000 strokes	rev/min 4	Vacuum mm wat. col 5	cm³/1000 strokes 6	rev/min 7	Vacuum mm wat. col	mm cm³/1000 strokes 8	
2250	470	34,7 - 35,7 (33,7 - 36,7)	1600 1000		35,2 - 36,7 (34,2 - 37,7) 31,7 - 33,2	500	525	2,2-3,2	
			1000	133	(30,7 - 34,2)	250	ca.760	4,5-10,5	

Checking values in brackets

2.76

Testoil-ISO 4113

### Test Specifications Fuel Injection Pumps (3) and Governors

VDT-WPP 001/4 MB 2,4 a

4. Edition

PES 4 M 55 C 320 RS 47 A EP/MN 60 M 38 DR (1)
RS 47 ...M 39 DR, 42 DR, 43 DR (1)
RS 47 ...M 40 DR (2)

supersede 6.75

company OM 616
engine (65 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,7 - 1,8

mm (from BDC)

max. RW

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 5	Fuel delivery cm <sup>3</sup> /100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
1000	12	2,1 - 2,6	0,3			
	9	1,1 - 1,7				
	18	4,1 - 4,9		,		
200	9	0,5 - 1,0		-		
				<u> </u>		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

38DR, 39DR, 42DR, 43DR (1)

	Leakage		Control-rod travel limitation breakaway*		Control		Auxiliary auxiliary		Torque control	
	Vacuum pressure drop	Time at least		Control rod travei		Control rod travel		Control rod travel	Vacuum	Control rod travel
mm	mm water col.	s	mmw.c.	mm	mm w.c.	mm	mm w.c.	mm	mm w.c.	mm
1	2	3	4	5	6	7	8	9	10	11
1,1+0,1	500-480	10	550	14,8	580	10,5-14,8	675	10,2-11,2	150	15,9-16,0
1			550-	580	615	7,8-11,8	850	8,8-9,8	250	15,5-15,9
control rod travel test (cols 4-11) = rotational speed 500 rev/min. adjust breakaway (cols 4-5) by means of shims* cam adjustment (B 8-9 - C 7-8) by means of shims*									350	15,0-15,4

#### C. Settings for Fuel Injection Pump with Fitted Governor

	il-load stop screw st oil temp 40°C (104°F)			ery character	stics	idle (stop idle (imb		Control road travel from full-load to
rev/min	Vacuum mm wat col 2	cm³/1000 strokes	rev/min 4	Vacuum mm wat. col. 5	cm³/1000 strokes 6	rev/min	Vacuum mm wat. col	mm cm³/1000 strokes 8
(1) 2250	520	39,7 - 40,7 (39,2 - 41,2)		360 140	38,7 - 40,7 (38,2 - 41,2) 38,2 = 39,7 (37,7 - 40,2)	250	ca. 840	4,5 - 10,5 dispersion max. 1,5

Checking values in brackets

	Leakage		Control limitatio breakav	n	Control			Auxiliary spring auxiliary cam**		ontrol
Torque control travel				Control rod travel		Control rod travel		Control rod travel		Control rod travel
	mm water col.	Į	mmw.c.	mm	mm w.c.	mm	mm.w.c.	mm	mm w.c.	mm
1	2	3	4	5	6	7	8	9	10	11
1,1+0,1	500=480	10	550	14,3	580	9,5-14,3	675	9,7-10,8	150	15,3-15,4
			550-	580	615	6,7-11,3	850	8,3-9,4	250	14,9-15,4
control rod travel test (cols. 4-11) = rotational speed 500 rev/min. adjust breakaway (cols. 4-5) by means of shims* cam adjustment (B 8-9 - C 7-8) by means of shims**									350	14,4-14,8

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load s Test oil te rev/min	stop screw mp. 40°C (104°l Vacuum mm wat, col 2	F) cm <sup>3</sup> /1600 strokes 3	Fuel delivery characteristics  Vacuum rev/min mm wat. col. cm³/1000 strokes  6			idle (stop idle (imbi		Control road travel from full-load to idle mm cm³/1000 strokes 8
(2) 2250	520 ,	38,7-39,7 (38,2-40,2)	1600 1000	360 140	37,9-39,5 (37,4-40,0) 37,2-38,7 (36,7-39,2)	250	ca. 840 d	4,5-10,5 ispersion max. 1,5

Checking values in brackets

#### **B.** Governor Settings

	Leakage		Control limitation breakay		Control			spring cam**	Torque control	
	Vacuum pressure drop			Control rod travel	Vacuum	Control rod travel		Control rod travel		Control rod travel
mm	mm water col	s	mmw.c	mm	mmw.c.	mm	mm w.c.	mm	mm w.c.	mm
1	2	3	4	5	6	7	8	9	10	11
- rotational sp	ontrol rod travel test (cols 4-11) rotational speed 500 rev/min djust breakaway (cols. 4-5) by means of shims* am adjustment (8 8-9 - C 7-8) by means of shims**									

	Full-load s Test oil ter rev/min 1	top screw np. 40°C (104°F Vāčuum mm wat, col. 2	F)	Vacuum mm wat. col.	stics cm³/1000 strokes 6	idle (stop idle (imba rev/min 7	Control road travel from full-load to idle mm cm³/1000 strokes 8
3 n	Checking	values in bracke	els				

#### \*\* Adjustment of idle stop:

At n = 500 and with the governor stop cam out of engagement, bring the control rod into full-load position by increasing the column of water to 520 mm and measure the control-rod travel obtained. Increase column of water further until the control rod has adjusted to 4.5 mm less control-rod travel - than in full-load position and measured at 520 mm column of water. In this position, slowly force the stop cam up to the end position and observe control rod.

If the spring retainer is correctly adjusted, the control rod must adjust to a control-rod travel  $3.7 \pm 0.5$  mm less - than in full-load position measured at 520 mm column of water. If the setting is lower or higher, then the position of the spring bolt in the spring retainer must be changed by inserting appropriate shims.

VDT-WPP 001/4 MB 2,0b 3. Edition

En

PES 4 M 50 C 320 RS14

EP/MN 60 M 31 DR

RS14Z EP/MN 60 M 31 DR ./.

supersedes 3.76

Daimler-Benz company:

OM 615 engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,70-1,80 (1,65-1,85)

mm (from BDC)

max. RW

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 5	Fuel delivery  cm <sup>3</sup> /100 strokes 6	Spring pre-tensioning (torque-control valve) mm
2250	13,3	3,4 - 3,5	0,2(0,25)	13,2	3,2 - 3,4	
250 1600/1000	(+0,1) 9,1 (+0,1 Sect.C	0,4 - 1,0 , col.4-6	0,15(0,2) 0,25(0,3)	1	0,4 - 1,0	

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

31 DR with S14

	Leakage Control-rod travel limitation breakaway*				Auxiliary auxiliary		Torque control			
Torque control travel	Vacuum pressure drop	Time at least		Control rod travel	Vacuum	Control rod travel		Control rod travel	Vacuum	Control rod  travel
mm	mm water col.	s	mmw.c.	mm	mm w.c.	mm	mm w.c.	mm	mm.w.c.	mm
1	2	3	4	5	6	7	8	9	10	11
1,0+0,1	500-480	10	490 510	13,3 - 530 *	530 600	9,5-13,3 2,0- 7,5	600 700	10,0-11,0 9,2-10,2	300	14,2-14,3 13,9-14,2 13,3-13,7 13,3-13,4
control rod travel test (cols. 4-11)  rotational speed 500 rev/min.  adjust breakaway (cols. 4-5) by means of shims*  cam adjustment (B 8-9 - C 7-8) by means of shims**										

#### C. Settings for Fuel Injection Pump with Fitted Governor

	stop screw mp. 40°C (104°	F)	Fuel deliv	very characteri	istics	idle (stop idle (imb		Control road travel from full-load to idle mm
rev/min	mm wat. col.	cm <sup>3</sup> /1000 strokes	rev/min	mm wat. coi	cm <sup>3</sup> /1000 strokes	rev/min	mm wat. col.	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7		8
2250	490	34,2 - 35,2 (33,3 - 36,2)	1600 1000	125	31,9 - 33,4 (30,9 - 34,4) 31,9 - 33,4 (30,9 - 34,4)	500 250	530 ca.800	2,0-3,0 4,5-10,0
								./.

Checking values in brackets

			Control limitation breakay	n	Control	rod travel test	Auxiliary auxiliary	cam**	Torque control	
Torque control travel	Vacuum pressure drop	Time at least		Control rod travel		Control rod travel	Vacuum	Control rod travel	Vacuum	Control rod travel
mm 1	mm water col.	ļ	mmw.c.	mm 5	mmw.c.	mm 7	mm w.c. 8	mm + 9 ***	mm w.c. 10	mm 11
1,0+0,1	500-480	10	490 515	13,2 - 535*	535 600	8,7-13,2 1,5- 7,7		9,8-10,8 9,0-10,0	150 300 400 490	14,1-14, 13,8-14, 13,3-13, 13,2-13,
<ul> <li>rotational sp adjust breakay</li> </ul>	vel test (cols. 4- leed 500 rev/mi way (cols. 4-5) int (B 8-9 - C 7-	n by mean	s of shimeans of s	ns* hims**						

#### C. Settings for Fuel Injection Pump with Fitted Governor

	Full-load stop screw Test oil temp. 40°C (104°F)  Vacuum rev/min   mm wat. col.   cm³/1000 strokes 1   2   3			Fuel delivery characteristics  Vacuum rev/min mm wat. col. cm³/1000 strokes  4 5 6			Vacuum mm wat. col.	Control road trave from full-load to idle mm cm <sup>3</sup> /1000 strokes 8	
1	2	3	ļ <u> </u>	ļ <u> </u>		<del> </del>			
2250	490	32,7-33,7 (31,7-34,7)	1600	350	31,2-32,7 (30,2-33,7)	500	550	2,0-3,0	
			1000	125	31,2-32,7 (30,2-33,7)	250	ca.800	4,5-10,5	

Checking values in brackets

#### **B. Governor Settings**

	limitat breaka		Control-rod travel limitation breakaway*		Control			Auxiliary spring auxiliary cam**		ontrol
Torque control travel	Vacuum pressure drop			Control rod travel	Vacuum	Control rod travel		Control rod travel	Vacuum	Control rod travel
mm	mm water col.	s	mmw.c.	mm	mm w.c.	mm	mm w.c.	mm	mmw.c.	mm
1	2	3	4	5	6	7	8	9	10	11
	,			-						
control rod travel test (cols 4-11) = rotational speed 500 rev/min adjust breakaway (cols. 4-5) by means of shims* cam adjustment (B 8-9 - C 7-8) by means of shims**										

Full-load s Test oil te	stop screw mp. 40°C (104°	F)	Fuel deliv	ery characteri	stics	idle (stop idle (imba		Control road travel from full-load to idle
rev/min	Vacuum mm wat. col. 2	cm³/1000 strokes	rev/min	Vacuum mm wat. coi: 5	cm³/1000 strokes 6	rev/min 7	Vacuum mm wat, col.	mm cm <sup>3</sup> /1000 strokes 8
(1 <u>3</u>								

40

WPP 001/4 EIC 3,9c 3. Edition

En

PES 4 A 80 D 420 RS 1278 RSV 300-1000 A 1 B 643 DR

supersedes 4.80

company Eicher

EDK 4-10 Turbo 55 kW (75 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

(2,10-2,30) Port closing at prestroke 2,15-2,25

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>2</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery . cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
980 300 500	10,7 <sup>+0</sup> ,1 7,4-7,6 - C, c	6,7 - 6,8 1,1 - 1,5 col.4-5	0,2(0,35) 0,2(0,3) 0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

	crated speed Control rod travel mm		Intermediate rated speed  4 . 5 6			Control lever deflection in degrees 7	Control lever deflection rev/min mm			rque control Control rod travel mm 11 +0,1
loose	800 x =	0,3-1,0 5,5	-	-	_	ca.29	300 100	5,5 min.19,0	980 450	10,7 10,7
ca.57		030 = 9,7 085 = 4,0 0,3 - 1,7					300 500 370-430	5,9 -6,1 max. 1,0 - 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(20)	emp 40°C (104°F) cm3/1000 strokes	Rotational-speed limitat Note changed to 1 rev/min cm3/1000 strokes 5		Starting for Idle rev/min 6	cm <sup>9</sup> /1000 strokes	Control rod travel rev/min 8 9		
980	68,0 - 69,0 (66,4 - 70,5)	1u20-1030*	500	60,0 - 62,0 (58,5 - 63,5)	100	16,5-17,1 mm RW	300	6,0

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.81

BOSCH

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Testoil-ISO 4113

WPP 001/4 MB 2,2 h

1. Edition

Er

PES 4 M 70 C 320 RS 50

EP/RSV 350-2200 MOB 329 DR

supersedes Daimler-Benz company engine OM 615/WK

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,50-1,60 (1,45-1,65)

mm (from BDC)

RW max.

Rotational speed rev/min	Control rod travel	Fuel delivery cm¥100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	12,0+0,1	3,1 - 3,4	0,3			
	15,0-15,1	2,2 - 2,8 3,8 - 4,4 0,4 - 1,0				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min   Control rod   travel   mm rev/min   3	interme	diate rated	speed	Control- lever dellection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm		rque control Control rod travel mm
ca.66°	2200 2300 2400	16,0 11,5 5,6	witho	out aux	iliar	ca.22 y spring	350 100	8,0 20,5-21,0	2200 1900 400	0 0 1,1-1,3
23	2300 2400 2470	10,2-12,0 3,6-7,0 0 -1,0	with	auxil	iary s	pring	350 550 770	7,7- 8,3 2,2- 5,2 0 - 1,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	Rotational- speed limitat		iel delivery aracteristics	Starting I	fuel delivery 5	4a) Idle stop		
rev/min	emp 40°C (104°F) cm³/1000 strokes 2	Note changed to 1 rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>9</sup> /1000 strokes	revimin 8	Control rod travel mm	
2180	37,0-38,0		-	-	-	-	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

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Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

40

WPP 001/4 MB 2.4n

1. Edition

En

PES 4 M 55 C 320 RS 49

RSV 400...2100 MOB349

supersedes

company

Daimler-Benz OM 616

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

1,70-1,80 Port closing at prestroke (1,65-1,85)

mm (from BDC)

# Testoil-ISO 4113

Rotational speed	Control rod travel	Fuel delivery	Difference cm³/ 100 strokes	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
2080	14,4-14,5	3,95 - 4,05	0,2(0,25)			
400	7,3- 7,5	7,9 - 13,9	0,2(0,25)		P	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed	l rev/min	Interm	ediate rate	ed speed	4	Lower	rated speed	3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4 .	5	6	Control- lever deflection in degrees 7	rev/min	Control rod   travel   mm   9	rev/min	Control rod travel mm
loose	800	0,3-1,0				ca.20	400	6,9	2080	14,4+0,1
	X =	= 4,0					400	7,3-7,5	1550	15,0+0,2
ca.62	2260-22	150=13,4 280) 4,0 0,3-1,7					820 -	880=2,0	450	15,4+0,1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>W</b>	ill-load stop	6 Rotational- speed limitat	speed limitat characteristics			Starting fuel delivery 5 4a Idle stop			
Test oil to	cm <sup>2</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm³/1000 strokes 5	rev/min	cm <sup>2</sup> /1000 strokes	rev/min 8	Control rod travel mm	
2080	39,7 - 40,7 (38,7 - 41,7)				100 Low i	RW (mm) 19,0-21,0 dle speed 7,5 -13,5 RW (mm) 7,3-7,5			

Checking values in brackets

6.81

<sup>\* 1</sup> mm less control rod travel than col 2

WPP 001/4 MB 2,2 e 4. Edition

PES 4 M 55 C 320 RS 49

EP/RSV 350-1600 M2 B 331 R

supersedes 5.7

RS 49

EP/RSV 350-1650 M2 B 344 DR ./.

Daimler-Benz

OM 615

RS 49,Z EP/RSV 675-1250 M1 B 345 R ./.

OM 616 - 2,4 -49Z

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,7 + 0,1

mm (from BDC)

max. RW

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm³/100 strokes	cm³/ 100 strokes 4	mm 2	cm³/100 strokes	mm 6
1000	12	2,7 - 2,9	0,3			
	9	1,6 - 2,0				
200	9	0,9 - 1,3				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

..331R

1 Uppe	r rated speed	rev/min	Interme	diate rated	speed	4	Low	er rated speed	(3) To	rque control		
Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min 3	4 .	5	6	Control lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm		
ca.72	1600 1700	16,0 9,8	witho	ut aux	ailiar	ca.28 v spring	350 150	8,0 19-21	1580	0		
<b>2</b> a	1800	6,0 8,5-10,9 3,0-5,3 0,3 - 1	with	auxili	iary s	pring	350 500 740	7,7-8,3 2,7-4,9 0 - 1	600 400	0 1,2-1,8		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	all-load stop	Rotational- speed limitat	Fuel delivery characteristics		Starting (	uel delivery 5	4a) Idle stop	
rev/min	emp 40°C (104°F) cm\$/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>9</sup> /1000 strokes	rev/min 8	Control rod travel mm
1580	34,7 - 35,7	1620			100	min. 20 dispe		7,5-11,5 .max.2)
(inrea	se by 0,5 cm³	į )						./.

Checking values in brackets

\* 1 mm less control rod travel than col 2

10.77

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Testoil-ISO 4113

#### **B. Governor Settings**

1 Uppe	r rated speed		interme	diate rated	speed	4)	- Lower	rated speed	3 Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control- lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	
ca.69	1630 1680	16,0 11,7	witho	ut aux	iliar	ca.24 v spring	350	8,0	1630	0	
	1720	8,0					350	20,5-21,0 7,7- 8,3	500	0,5-0,7	
<b>2</b> a	1730 d	ca. 13,8 ca. 7,0 0,3 -1,0	with	auxil <sup>-</sup>	iary s	pring	500 680	2,9-4,3			

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	III-load stop	6 Rotational- speed limitat.	(3a) Fu	el delivery aracteristics	Starting f	uel delivery 5	4a idle stop	
Test oil to rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1630	36,7-37,7	1665-1675*	1500 1250	36,2 - 38,2 35,7 - 37,7	100	min. 20 disp	350 ersion	7,5-11,5 max.2)
(inre	ase by · 0,5 cm³	!)	1725-	1740 = 7,0 mm RW				

Checking values in brackets

Testoil-ISO 4113

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min  Control rod  travel  mm rev/min  3	Intermed	diate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	( V )	rque control   Control rod   travel   mm   11
ca.59	1240 1260 1280	16,0 12,6 8.6	with	nout a	uxiliā	ca.32 ry sprin	675 9 200 675	7,5 20,5-21,0 7,2- 7,8		-
20	1240 1300 1400	ca. 14,4 ca. 6,5 0,3-1,0	with	ı auxi	liary	spring	730 820	2,4-5,0 0 - 1		

#### C. Settings for Fuel Injection Pump with Fitted Governor

	II-lead stop	Rotational- speed limitat.		el delivery aracteristics	Starting f	uel delivery 5	da Idle stop	
revimin	emp. 40°C (104°F) cm³/1000 strokes 2	changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9
1230	35,2-36,2	1250-1270*			100	min.20	675	7,5
1230	39,7-40,7	1270-1280*			ļ		<u> </u>	
			1300-	1315 = 6,5 mm RW				
(inc	rease by $\pm 0.5$	m3 i )					İ	

G7

Checking values in brackets

\* 1 mm less control rod travel than col. 2

VDT-WPP 001/4 MB 2,4c 2. Edition

EP/RSV 400-2100 MO B 364 D (1)PES 4 M 55 C 320 RS 49 Daimler-Benz 350-1650 M2 B 347 (2) OM 616 RS 49 Z 350-1650 M2 B 347 (3)(1 - 65 PS)(2 - 60 PS)RS 49 400-2100 M0 B 348D All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers (4)(3 - 55 PS) (4 - L/O 309)

A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

1,7 + 0,1

mm (from BDC)

max. RW

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm³¥100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>5</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	12	2,1 - 2,6	0,3		J. J. J. J. J. J. J. J. J. J. J. J. J. J	
	9	1,1 - 1,7				
	15	3,1 - 3,8				
200	9	0,5 - 1,0				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

400 - 2100 MOB 346 D (1)

(1) Uppe	r rated speed	rev/min	Intern	Intermediate rated speed			Lower rated speed			3 Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5		6	Control- lever deflection in degrees 7	rev/min 8	Control rud travel mm	rev/min	Control rod travel mm	
ca.59	2100 2200 2300	16,0 10,6 3,7	wit	nout	aux	iliar	ca.18 y spring	400 250 400	7,4 20,5-21,0 7,1- 7,7		0	
(2a)	2250 c	a. 14,3 a. 7,3 ,3 -1,0	wit	n au	axili	ary s	pring	480 580	1,8-4,0		1,0-1,2	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	il-load stop	Rotational- speed limitat		ei delivery aracteristics	Starting f	uel delivery 5	Idle stop		
rev/min	emp 40°C (104°F) cm³/1000 strokes 2	Note changed to ) rev/min	rev/min	cm³/1000 strokes 5	rev/min 6	cm <sup>9</sup> /1000 strokes		travel mm 9	
2080	39,7 - 40,7	2150-2165*	1600 1000	38,7 - 40,7 38,2 - 40,2	100	min.20 mm RW		7,5-11,5 spersion max.1,5	
(inc	rease by ± 0,5	cm <sup>3</sup> !)	2240-	2260 = 7,3 mm RW)					

Checking values in brackets

1 mm less control rod travel than col 2

10.75

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#### **B.** Governor Settings

1 7	r rated speed Control rod travel mm	rev/min Control rod travel mm rev/min	Intermed	liate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	(3) To rev/min 10	rque control   Control rod   travel   mm   11
ca.62	1660 1700 1740	16,0 12,4 8,0	with	out au	xiliaı	ca.18 y spring	200	8,5 20,5-21,0 8,2- 8,8	-	-
23	1650 1740 1900	ca. 14,8 ca. 7,8 0,3 -1,0	with	auxil	iary :	pring	350 500 680	2,9- 5,6 0 - 1		

#### C. Settings for Fuel Injection Pump with Fitted Governor

	II-load stop	Rotational- speed limitat.	39 Fu	el delivery aracteristics	Starting f	uel delivery 5		e stop
	emp. 40°C (104°F) cm³/1000 strokes 2	changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7		travel mm 9
(2) 1650	39,2 - 40,2	1665-1675*	1735	- 1750=	100	min.20mm RW		7,5-11,5 rsion max
(3-Z) 1650	37,7 - 38,7	1665-1675*		7,8 mm RW			1,5	S TON MAX
(incre	ase by ± 0,5 cm	3 ! )	1/35	6,4 mm RW				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

Degree of deflection	r rated speed Control rod travel mm		Intermed	liate rated	speed 6	Control- lever deflection in degrees 7		rated speed Control rod traveł mm	rev/min	rque control Control rod travel mm
ca.59	2100 2200 2300	16,0 10,6 3,7	with	out au	xilia	ca.18 ry sprin	250	7,4 20,5-21,0	2080	0
28	2250	ca. 14,3 ca. 7,3 0,3-1,0	with	auxil	iary s	pring	400 480 580	7,1- 7,7 1,8- 4,0 0 - 1	500	1,0-1,2

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	II-load stop	6 Rotational- speed limitat. 3a Fuel delivery characteristics			Starting f	uel delivery			
Test oil to rev/min 1	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm³/1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min	Control rod travel mm 9	
(4) 2080	39,7-40,7	2150~2165*	1600 1000	,	100	min.20mmRW dis	400 persio	7,5-11,5 n max. 1,5)	
(inre	ase by - 0,5 cm	!)	2240	-2260: 7,3 mm RW					

Checking values in brackets En

\* 1 mm less control rod travel than coi. 2

FIA 13,8 a 4 1. Edition

PE 6 P 120 A 720 RS 167 Z RQV 225/1100 PA 118 R supersedes...

company: Fiat

221 A

210 kW (286 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

estoil-ISO 4113

2,0 - 2,1 (1.95-2,15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,3+0,1	17,5-17,9	0,5(0,9)			]
225	7,5-7,7	1,7- 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin	g of slider	Full-load s	peed re	gulation	_	Idle speed regulation				Torque control		
PRG che	ck (1)	Setting po	int	Test spec	cifications (4)	Setting p	oint	Test spe	cifications (5)		(3)	
1	Control rod travel mm 2	rev/min 3	Control rod travel mm	Control rod travel rnm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm	rev/min 11	Control rod travel mm	
550	15,6-16,4	550	16,0	9,3	1145-1160	225	7,6	100 225	min.7,5 7,5-7,7		10,3-10,4 10,3-10,5	
1300	0- 1,0			4,0	1185-1215			365	-405=2,0			

Torque-control travel i flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor c Test oil ten		Control rod stop 3a	Fuel delivery characteristics			Starting for	d Control
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5		rev/m:n 6	red travel cm <sup>3</sup> /1000 strokes:/ mm 7
1100	175,0-179,0 (172,0-182,0)					100	min. 15mm RW

Checking values in brackets

2.81

WPP 001/4 MWM 8,8 a

2. Edition

PE 6 A 100 D 320 RS 3008

EP/RSV 300-1150 A1B489DR

supersed€s 12.68

PE 8 A 100 ..

RS 3009

EP/RSV 300-1150 A1B489DR RQV 300/550-750AB660R, 871R company MWM

D/TD 232 - 6 D/TD 232 - 8

Instructions P. 3
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

estoil-ISO 4113

2,0 + 0,1

mm (from BDC)

Rotational speed rev/min 1	Control rod traver	Fuel delivery cmil/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>9</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,6 - 8,2	0,4			
	6	3,2 - 4,2				
	12	12,3 -13,4				
200	9	3,4 - 4,6				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

EP/RSV .. 489DR

11 1	rated speed Control rod travel mm		Interme	Intermediate rated speed  4 . 5 6		Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	1131	rque control Control rod travel mm
ca.66	1150 1200 1250	16,0 11,4 5,8	with	out au	xilia	ca.28 ry sprin	טטו ין	6,0 19 - 21		note
23	1230 1280 1400	6,0-9,3 1,8-4,0 0,31					300 350 400 500	5,7 - 6,3 3,5 - 4,7 0,6 - 3,0 0 - 1		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Fu	ill-load stop	6 Rotational- speed limitat		Fuel delivery Scharacteristics		uel delivery 5	4a) Idle stop		
Test oil to	cm <sup>3</sup> /1000 strokes	Note changed to ) rev/min	rev/min	cm <sup>9</sup> /1000 strokes 5	rev/min	cm%1000 strokes		Control rod travel mm	
See p	age 4-14								

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

$\sim$	rated speed		Intermediate				rated spe		3 Tor	que control
Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		Control rod travel
lever	rev/min	mm	lever	rev/min	mm	lever	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.66		14,8-17,8	ca.34		13,7-15,5		250	6,8-8,0		
	770 790	9,0-14,0 3,5-10,5		600 650	8,5-10,0 4,5-7,0		300 350	4,5-7,0 3,6-4,0	-	
	800	0 - 8		720	0		550	1,8-4,0		
5	840	0					630	0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-le	oad stop	6 Rotational- speed limitat		el delivery aracteristics	Starting fuel delivery Idle		5a Idle stop		
Test oil tem rev/min 1	p 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strakes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
See pag	e 4-14		<b>6</b> a)		100	15,7-16,3 mm RW 5,3-5,7 mm RW			

Checking values in brackets

#### **B. Governor Settings**

1 Upper	rated speed	1	Intermediate	rated spe	ed	4 Lowe	r rated spe	ed	(3) Tor	que control
Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		Control rod travel
lever	rev/min 2	mm 3	lever	rev/min	mm 6	lever	rev/min 8	mm 9	rev/min 10	mm 11
	<del> </del>		<u> </u>	<u> </u>		<del> </del>		3	110	'
							•		l	
ł		•	1			ŀ			1	İ
İ		<u> </u>					<u>.</u>			
(5)										
	<u> </u>	<u></u>				1		1	i	

The numbers denote the sequence of the tests

2 Full-lo	oad stop	6 Rotational- speed limitat		el delivery aracteristics	Starting Idle	fuel delivery	5a Idio	e stop
Test oil tem rev/min 1	op 40°C (104°F) cm³/1000 strokes 2	Note changed to rev/min	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	B .	Control rod travel mm 9
							<u> </u>	
	İ				l i			

<sup>\* 1</sup> mm less control rod travel than col 2

\*\* Governor ..871R = electromagnetic starting fuel delivery unlocking (24 volt)
Switch on magnet for max. 15 sec. when testing.

The nameplate described at  $\underline{\text{MWM 1.5 a}}$  has recently been extended to 2 speeds and 2 deliveries - in column n = (speed) and Q = (full-load delivery) for more accurate setting in the case of governors with torque control.

The following points apply, deviating from WPP 001/4, Supplement 1, setting the governor and the pump:

- (2) Setting according to nameplate n = (speed 1) and
  Q = (delivery 1); or according to columns 1 and 2
- (3) Is contacted until change of control-rod travel, as read under (2), or (with new nameplate) until the 2 delivery is reached at speed 2; or according to columns 4 and 5
- (6) Is adjusted according to nameplate n = (speed 1 +
  20 rpm) or column 3

For repairs on Fendt tractors on which the new nameplate (with 2 speeds and 2 deliveries) has not yet been introduced, the full-load data apply - ordered according to engine types -

#### according to the above note

In the case of new replacement pumps from Stuttgart warehouse there is no spring retainer. Send for from MWM according to old nameplate.

Cam sequence and angular spacing:

PE 8 A:

En

0

engine p	delivery	Rotational-speed	Fuel deliv	ery characteristics	Starting fuel delivery	Intermediate
	emp 40°C (104°F)	limitation		3	Idle switching point	rotational speed Torque-control travel
rev/min	cm <sup>3</sup> /1000 strakes 2	rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min cm³/1000 strokes 6 7	rev/min mm 8
F 165	PS / 2500-	7		'	•	·
1250	81,0-83,0	1270	750	82,5-85,5		
B'162	PS / 2500 r	nin-1				
1250	81,0-83,0	1270	750	82,5-85,5		
B 162	PS / 2500 r	nin-1		· · · · · · · · · · · · · · · · · · ·		
1250	81,0-83,0	1270				
F 160	PS / 2300 r	nin-1				
1150	80,0-82,0	1170	750	82,5-85,5		
B'155	PS / 2300 r	nin-1				
1150	80,0-82,0	1170	750	82,5-85,5		
B 155	PS / 2300 r	nin-1				
1150	80,0-82,0	1170				
A 141	PS / 2300 r	nin-1	<del></del>			
1185	76,0-78,0	1200				
B'144	PS / 2100 m	nin-1				<del></del>
1050	77,0-79,0	1060	750	82,5-85,5		
B 144	PS / 2100 n	nin-1				-
1050	77,0-79,0	1060				
A 131	PS / 2100 n	nin-1				
1080	73,0-75,0	1090				
F 144	PS / 2000 n	iin-1		· · · · · · · · · · · · · · · · · · ·		
1000	77,0-79,0	1010	750	82,5-85,5		
B'138	PS / 2000 n	1in-1	<u></u>			
1000	77,0-79,0	1010	750	82,5-85,5		

①

#### C. Settings for Fuel Injection Pump with Fitted Governor

engine po Full-load of Control-ro Test oil te	delivery	Rotational-speed limitation	Fuel deli	very characteristics	idle	fuel delivery ng point I	Intermed rotationa Torque- travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/mៈក	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	<u> </u>
B 138	PS / 2000 m	nin-1		•	•	•	•	•
1000	77,0-79,0	1010						
A 126	PS / 2000 m	iin-1				<del>- 18</del>		
1030	73,0-75,0	1040						
B 127	PS / 1800 m	nin-1						
900	78,0-80,0	910						
A'115	PS / 1800 m	in-1			<del></del>			
900	78,0-80,0	910						
A 115	PS / 1800 m	in-1						<del></del>
930	74,0-76,0	940						
B 108	PS / 1500 m	nin-1						
750	80,0-82,0	760						
A' 98	PS / 1500 m	in-1						
750	80,0-82,0	760						
A 98	PS / 1500 m	in-1						
775	76,0-78,0	785						
B 162	PS / 2300 m	in-1						
1150	83,0-85,0	1170						

D 143 PS / 1800 min-1

Special output

89,0-91,0 900 Emergency power output

C 130 PS / 1800 min<sup>-1</sup> 900 89,0-91,0 910 Emergency power output

#### C. Settings for Fuel Injection Pump with Fitted Governor

engine por Full-load de Control-rod Test oil tem	elivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchin	fuel delivery	Intermedi rotational Torque-c travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm

D 120 PS / 1500 min-1 750 90,0-92,0 760 Emergency power output

C 109 PS / 1500 min-1 750 90,0-92,0 760 Emergency power output

Testoil-ISO 4113

engine p Full-load Control-r Test oil te	delivery	Rotational-speed limitation	Fuel deliv	ery characteristics	Idle	fuel delivery	Intermed rotationa Torque- travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	88	↓
F 220	PS 2500 m	nin-1	•		•	•		
1250	81,0-83,0	1270	750	82,5-85,5				
B'216	PS 2500 r	nin-1						·
1250	81,0-83,0	1270	750	82,5-85,5				
B 216	PS 2500 r	nin-1			· · · · · · · · · · · · · · · · · · ·			
1250	81,0-83,0	1270						
F 213	PS 2300 i	min-1					7	
1150	80,0-82,0	1170	750	82,5-85,5				
B'206	PS 2300 i	min-1						
1150	80,0-82,0	1170	750	82,5-85,5				
B 206	PS 2300 t	nin-1						
1150	80,0-82,0	1170						
A 188	PS 2300	min-1		1				
1185	76,0-78,0	1200						
B'192	PS 2100	min <sup>-1</sup>						
1050	77,0-79,0	1060	750	82,5-85,5				
B 192	PS 2100	min-1					<del></del>	
1050	77,0-79,0	1060						
A 175	S PS 2100	min-1						
1080	73,0-75,0	1090						
F 192	PS 2000	min-1						
1030	77,0-79.0	1040	750	82,5-85,5				
B'184	PS 2000	min-1						· · · · · · · · · · · · · · · · · · ·
1000	77,0-79,0	1010	750	82,5-85,5				

(1)

estoil-ISO 4113

#### C. Settings for Fuel Injection Pump with Fitted Governor

engine por Full-load de Control-roo Test oil terr	elivery	Rotational-speed limitation	Fuel deliv	very characteristics	S@arting Idle switchir	fuel delivery g point	Intermedi rotational Torque-c travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	}	mm
1	2	3	4	5	10		-	<del></del>

B 184 PS / 2000 min-1

1010 1000 77,0-79,0

A 168 PS / 2000 min<sup>-1</sup>

1010 73,0-75,0 1000

B 169 PS / 1800 min<sup>-1</sup> 78,0-80,0 940 930

A'154 PS / 1800 min<sup>-1</sup>

900 78,0-80,0 910

A 154 PS / 1800 min-1

900 74,0-76,0 910

B 144 PS / 1500 min-1

775 80,0-82,0 785

A'130 PS / 1500 min<sup>-1</sup>

750 80,0-82,0 760

A 130 PS\_ / 1500 min<sup>-1</sup>

76,0-78,0 760 750

B 216 PS / 2300 min-1

1150 83,0-85,0 1170

Special output

D 190 PS / 1800 min<sup>-1</sup>

89,0-91,0 900

Emergency power output

C 173 PS / 1800 min-1

89,0-91,0

910

Emergency power output

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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#### C. Settings for Fuel Injection Pump with Fitted Governor

engine po Full-load de Control-ros Test oil ten	Blivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchin		intermedi rotational Torque-c travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		mm
1	12	3	14	3	ļ <u>.                                    </u>	<u>'</u>	<del></del>	

D 160 PS / 1500 min-1

750 90,0-92,0 760
Emergency power output

C 145 PS / 1500 min-1

750 90,0-92,0 760
Emergency power output

Control	power d delivery -rod stop temp 40°C (104°F)	Rotational-speed limitation	Fuel deli	very characteristics	Starting Idle switchir	fuel delivery	Intermed rotationa Torque	l speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	travel rev/min	mm
<del> </del>	2	3	4	5	6	7	8	ļ
F 210		<u>n-1</u>						
1150	105,0-107,0	1170	800	104,5-107,5				
B'207	7 PS / 2300 m	in-1						
1150	105,0-107,0	1170	800	104,5-107,5				
B 207	7 PS / 2300 min	- i						
1150	105,0-107,0	1170						
A 188	3 PS / 2300 mi	n-1						
1185	101,0-103,0	1200						
B'192	PS / 2100 min	-1						
1050	103,0-105,0	1060	800	104,5-107,5				
B 192	PS / 2100 min	·1		· <del>····································</del>				
1050	103,0-105,0	1060						
A 174	PS / 2100 min	-1						
1080	99,0-101,0	1090						
F 192	PS / 2000 min	-1						
1000	102,0-104,0	1010	800	104,5-107,5				
B' 184	PS / 2000 min-	1						
1000	102,0-104,0	1010	800	104,5-107,5				
3 184	PS / 2000 min	-1						
1000	102,0-104,0	1010						
A 167	PS / 2000 min	n-1	····					<del></del> -
1030	98,0-100,0	1040				¥		
168	PS / 1800 mir	n-1						
900	101,0-103,0	910						

Testoil-ISO 4113

#### C. Settings for Fuel Injection Pump with Fitted Governor

engine po Full-load d Control-roi Test oil ten	elivery	Rotational-speed limitation	Fuel deln	very characteristics	Starting Idle switchir	fuel delivery	intermed rotational Torque-c	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	travel rev/min	j mm
1	2	3	4	5	6	7	8	
A+152	DC / 1000	<u>'</u> 1	!		,			

A'153 PS / 1800 min-1

900 101,0-103,0 91

A 153 PS / 1800 min-1

930 97,0-99,0 940

B 142 PS / 1500 min<sup>-1</sup>

750 100,0-102,0 760

A'129 PS / 1500 min-1

750 100,0-102,0 760

A 129 PS / 1500 min-1

775 96,0-98,0 785

	tings for Fu			P 11:01111100		<b>VEITIOI</b>	<del></del>	
engine po Full-load o Control-ro Test oil te	delivery od stop mp 40°C (104°F)	Rotational-speed limitation	Fuel deliv	ery characteristics	idle	fuel delivery ig point	intermed rotationa Torque- travel	l speed
ten/wiu	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	1	mm
5 200	2	3	4	5	6	7	8	
F 292								
1250	102,0-104,0	1270	800	100,5-103,5	,			
B'292	PS / 2500 min	<u>-1</u>						
1250	102,0-104,0	1270	800	100,5-103,5	•			
B 292	PS / 2500 min	-1			<del></del>			
1250	102,0-104,0	1270						
	PS / 2300 min	-1			-			
1150	100,0-102,0	1170	800	100,5-103,5				
B'275	PS / 2300 min	-1			<del></del>			
1150	100,0-102,0	1170	800	100,5-103,5				
B 275	PS / 2300 min	-1					<del></del>	
1150	100,0-102,0	1170						
A 250	PS / 2300 min	-1			<del></del>			
1185	96,0-98,0	1200						
B'255	PS / 2100 min	-1		······································				
1050	99,0-101,0	1060	800	100,5-103,5				
B 255	PS / 2100 min	-1						
1050	99,0-101,0	1060						
	PS / 2100 min-	-1					·	<del></del> -
1080	95,0-97,0	1060						
F 256	PS / 2000 min	·1						
1000	99,0-101,0	1010	800	100,5-103,5				
B'245	PS / 2000 min-	1						
1000	99,0-101,0	1010	800	100,5-103,5				

engine power full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel deli	very characteristics	Starting Idle switchin	fuel delivery	Intermed rotationa Torque- travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> / i000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	ļ
B 245	PS / 2000 min-	<u> </u>	•	•		•		•
1000	99,0-101,0	1010						
A 222	PS / 2000 min <sup>-</sup>	1						*
1030	95,0-97,0	1040						
B 224	PS / 1800 min-	1				<del></del>		
900	99,0-101,0	910						
A'203	PS / 1800 min	1			·			
900	99,0-101,0	910						
A 203	PS / 1800 min-	1	······································	<u>i.</u>				
930	95,0-97,0	940						
B 189	PS / 1500 min-	1						
750	98,0-100,0	760						
A' 172	PS / 1500 min <sup>-</sup>	1						
750	98,0-100,0	760						
A 172	PS / 1500 min	1						<del></del>
750	94,0-96,0	760						
D 250	PS bei 1800 mi	n-1					<del></del>	
900	111.0-113,0	910			: 1 ∰·			
C 227	PS / 1800 min-	1 .			~ <del>~~~</del>			
900 <b>Emerg</b> e	111,0-113,0 ency power outp	910 ut						
D 210	PS / 1500 min-	1		· <del> · _ · _ · _ · _ · _ · _ · _ · _ · </del>		-		<del></del>
750 Emerge	111,0-113,0 ency power outp	760 <b>ut</b>						

# Testoil-ISO 4113

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#### C. Settings for Fuel Injection Pump with Fitted Governor

engine pov Full-load de Control-rod Test oil tem	Hivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchir		Intermediate rotational speed Torque-control travel	
rev/min cm³/1000 strokes		rev/min	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7		mm

C 191 PS / 1500 min-1

750 111,0-113,0

760

WPP 001/4 MB 12,8 1

3. Edition

PE 8 P 110 A 320 LS 844

RQ 300/1250 PA 473 R

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1

supersedes 10.80

company: Daimler-Benz

OM 402 (235,4 kW-320 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

 $0 - 45 - 90 - 135 - 180 - 225 - 270 - 315 \pm 0,50(\pm 0,75^{\circ})$ 

A. Fuel Injection Pump Settings

Port closing at prestroke

(3,35-3,55)

mm (from BDC)

cy1.8

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,7+0,1	13,4 - 13,6	0,4(0,8)			
300	6,4-6,6	1,1 - 1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

PRG che	Control rod travel	1	int Control	_	rev/min	Idle spee Setting p rev/min 7	-		cifications 5 Control rod travel mm	Torque o	Control rod (3)
700	19,2-20,8	700	20,0		1295-1310	300	6,5	100 300	min.8,0 6,4-6,6		11,7-11,8 11,7-11,9
1500	0- 1,0			4,0	1355-1385	·		410-	450 =2,0		

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test og samp, 40°C (104°F)		Control rod stop 3a	Fuel delive	ery characteristics	Зъ	Starting fuel delivery Idle speed		
rev/min	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5		rev/min 6	Control rod travel cm <sup>3</sup> /1000 strokes:/ mm	
LDA	0,7 bar		LDA	0 bar	(	100 Electr	120,0-140,0 omagnet 24 V)	
1250	134,0-136,0 (131,0-139,0)		450	82,0-85,0 (79,0-88,0)		300 100-	6,5 220 (80-240)	

Checking values in brackets

.4.81

#### **D. Adjustment Test for Manifold Pressure Compensator**

Test at n =

700

rev/min X老XXXXXX pressure - in bar gauge pressure

MB 12,8 1

_	
	13
	4
l	O
I	S
l	工
I	<u></u>
l	est
I	es.
ı	<b> </b>

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
844 with 473 R	0,7 bar	0,425 0,33 0	11,7 - 11,8 11,0 - 11,1 10,3 - 10,5 9,6 - 9,7

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Festoil-ISO 4113

#### **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 MB 8,7 c 2 1. Edition

En

PE 6 A 90 D 410 RS 2124 X

RQ 375/1275 AB 658-1 DL

supersedes

Daimler-Benz

company: OM 360

engine: 110 kW (150 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings 2,15-2,25 Port closing at prestroke (2,10-2,30)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,3-9,4	7,0 - 7,1	0,3(0,45)			
600	10,1+0,1	6,5 - 6,8	0,2(0,4)			
				ı		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1	Checking of slider Full-load speed PRG check Setting point		•	egulation   Test specifications 4		Idle speed regulation Setting point   Test specifications			cifications (5)	Torque control  3		
rev/min	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min	rev/min	Control rod travel mm 8		Control rod travel	rev/min	Control rod travel	
700	15,6-16,4	700	16,0		1290-1300 1345-1375	375		375	min.9,0 7,4-7,6 505=2,0mm max.1,0		9,3-9,4 10,1-10,2 9,8-10,0 9,4-9,7	

Torque-control travel on flyweight assembly dimension a 0.4 mm

Speed regulation: At 1290-1300 min<sup>-1</sup>

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics	.a.d speed		
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	Control rod travel cm <sup>3</sup> /1000 strokes:/ mm	
1250	69,5-70,5 (67,5-72,5)	650	600	64,5-67,5 (62,0-69,0)	100	59,25-69,25 bei 10,2-10,6 mm RW	

Checking values in brackets

2.82

BOSCH

WPP 001/4 KHD 1n3 2. Edition

PE 8 A 95 D 410 LS 2451 RQ 300/1075 AB 1046 DL supersedes 8.80

company

KHD

engine:

F 8 L 413 F

157 kW (213 PS)

Air test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3  $0 -45 -90 -135-180-225-270-315^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

A. Fuel Injection Pump Settings

Port closing at prestroke

estoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1075	9,2-9,3	8,4 - 8,6	0,3(0,6)			
300	5,9-6,1	0,9 - 1,4	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

L	Checking of slider PRG check Control rod		Full-load speed regulation  Setting point   Test specifications   Control   Control   rod travel   rod travel			Idle speed regulation Setting point Control Inditravei    Test specifications   Control   Contro			Control rod	Torque control Control rod travel		
rev/min	travel mm	rev/min	mm 4	mm 5	rev/min 6	rev/min	mm 8	rev/min 9		rev/min		
600	15,6-16,4	600	16,0	8,2	1120-1135 1180-1210	300	6,0	100 300 350- 450	min.7,5 5,9-6,1	1075 950 800	9,2-9,3 9,2-9,5 9,6-9,8 9,8-9,9	

Torque-control travel on flyweight assembly dimension a =

1120-1135min-1 Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop (3a) Fuel de		ery characteristics	-and opera	
rev/min	cm³/-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes	rev/min 6	Control rod travel cm <sup>3</sup> /1000 strokes:/ mm 7
1075	82,5-84,5 (80,5-87,5)	600	1000	83,0-86,0 (81,0-88,0)	100	119,0-129,0
			700	84,5-87,5 (82,5-89,5)		
	7.		<b>1</b>			

Checking values in brackets

WPP 001/4 PEN 6.0e 1. Edition

PES 6 MW 100/320 RS 1004 0 403 476 011

RSV 325-1250 MWO/308 supersedes

company engine

Volvo/Penta TD 60 D 118 kW (160 PS)

1 - 5 - 3 - 6 - 2 - 4

 $0 -60 -120 -180 -240 -300 \pm 0,50(0,75)$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95)

mm (from BDC) RW 9,0-12,0 mm

# Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel	Fuel delivery  cm\(\frac{1}{2}\)100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,9+0,1	8,1 - 8,3	0,35(0,6)			
325	4,7-4,9	0,95-1,35	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	r rated speed	rev/min	Interme	diate rated	speed	(4)		rated speed	1 3 /	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees	rev/min.	Control rod travel mm	rev/min	Control rod travel mm
<u> </u>	۷	3	· ·		10	<del>                                     </del>	0	3	10	''
loose	800	0,3-1,0				ca.26	325	4,3	350	11,5+0,1
	x =	4,0					325	4,7-4,9	500	11,2-0,1
ca.63		300 = 9,9 $365 = 4,0$							1350	10,9±0,1
(2a)		0,3 -1,7					450-510	= 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> Ft	ill-load stop	Rotational-speed limitat		uel delivery naracteristics	Starting t	tuel delivery 5	4a Idle stop		
Test oil to rev/min 1	emp 40°C (104°F) cm <b>3</b> /1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm³/1000 strokes 5	rev/min	cm <sup>2</sup> /1000 strokes	rev/min 8	Control root travel mm	
1000	81,0-83,0 (79,0-85,0)	1290-1300*			100 325	min.140 9,5 -13,5 (7,0 -16,0)	325	4,8	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

WPP 001/4 PEN 6,0 f 1. Edition

En

PES 6 MW 100/320 RS 1004 0 403 476 012

RSV 325-1050 MW4/308

supersedes

company

1 - 5 - 3 - 6 - 2 - 4

TD 60 D engine

 $0-60-120-180-240-300 \pm 0,50 (0,75)$ 

112 kW (152 PS)

Volvo/Penta

A. Fuel Injection Pump Settings

Port closing at prestroke

estoil-ISO 4113

2,80-2,90 (2,75-2,95)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

mm (from BDC)

RW 9.0 - 12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <b>3</b> /100 strokes	cm³/ 100 strokes 4	mm 2	cm <sup>\$</sup> /100 strokes	mm 6
1000	11,0+0,1	8,2-8,3	0,35(0,6)			
325	4,7-4,9	0,95-1,35	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Uppe	r rated speed	rev/min	Intermed	liate rated	speed	4	Lower	rated speed	(3) To	rque control
Degree of	Control rod travel	Control rod travel			Ì	Control- lever		Centrol rod travel		Control rod travel
deflection of control lever	mm	mm rev/min				deflection in degrees	rev/min	mm	rev/min	mm
1	2	3	4 .	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.26	325	4,3	350	11,5+0,1
	x =	4,0					325	4,7-4,9	500	11,2-0,1
ca.63	1090 -	1100=10,0	i						1050	11,0+0,1
28		1165= 4,0 0,3-1,7					450 -	510 = 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

Test oil to	emp 40°C (104°F)	Rotational- speed limitat Note changed to )	Ch	nel delivery naracteristics		fuel delivery 5	•	e stop Control rod travel
rev/min	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm#/1000 strokes	rev/min 8	mm 9
1000	82,0-84,0 (80,0-86,0)	1090-1100*		,	100 325	min.140,0 9,5-13,5 (7,0-16,0)	325	4,8

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.82

WPP 001/4 KHD 4.7 a 1. Edition

En

PES 5A 80 D 410/3 RS 2526

RSV 325-1200 A8B2147 I

supersedes

1-3-5-4-2 je 72°  $\pm$  0,5° ( $\pm$ 0,75°)

company

engine

KHD F5L912

65 kW (88 PS) Schlepper |

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

Festoil-ISO 4113

1,9.2,0 (1,85-2,05)

mm (from BDC)

Rotational speed rov/min 1	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,5+0,1	6,0-6,1	0,2(0,35)			
325 800	8,9-9,1 12,1+0,1	0,9-1,5 C, Sp 4 u 5	0,2(0,3) 0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

Degree of deflection of control lever	Control rod travel mm	rev/min Control rod !ravel mm rev/min	Interm	ediate rate	d speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	3 To	rque control   Control rod   travel   mm
loose	800 X 1240-12	0,3-1,0 = 4,5 250 =10,5	-	<u>-</u>	-	ca.19	325 325 465-525	8,5 8,9-9,1 = 2.0	1200 500 950	11,5+0,1 12,1+0,1 11,8+0,2
(2a) ,	1450 =0	315 = 4,0 ),3 - 1,7						2,0	) 550	11,0+0,2

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

(4)	ull-load stop emp. 40°C (104°F)	Rotational- speed limitat	33 F	uel delivery paracteristics	Starting I	fuel delivery 5	<b>4a</b> Idl	e stop
rev/min	cm <sup>3</sup> /1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>4</sup> /1000 strokes	rev/min 8	Control rod travel mm
1200	60,0-61,0 (58,5-62,5)	1240-1250*	800	58,0-60,0 (56,5-61,5)	100	19,0-21,0 mm RW		
								~

Checking values in brackets

\* 1 mm less control rod travel than col 2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

WPP 001/4 MAN 11.1 h

5. Edition

Testoil-ISO 4113

PES 6 A 95 D 410 LS2485 RQV 250-1100 AB850D (1) supersedes 3.84	
LS2485Z RQV 250-1100 AB850D (2) company:M A N	
LS2485 ROV 750 AB955 (3) engine D 2566 M KombNr. O 400 846 371 (1) MAN-Nr. 1-7727 (1) M/MF-177 kW/2200 r	nin_i
0 400 846 403 (2) MAN-Nr. 1-7842 (2) MSFV-162 kW/2200 r 0 400 846 376 (3) MAN-Nr. 1-7738 (3) ME-126 kW/1500 r	nin_1

# A. Fuel Injection Pump Settings

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery 2485 cm /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery 2485Z cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	12,3 - 12,5	0,3(0,6)	11,0+0,1	11,2 - 11,4	
250	5,9-6,1	1,1 - 1,7	0,3(0,5)	5,6-5,8	0,9- 1,5	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

2485 mit 850D (1)

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed		Stidings	leeve travel
Degree of deflection of control	rev/min Control	Control rod travel	(la)	Degree of deflection of control		Control rod travel	Degree of deflection		Control rod travel	Gilding 5	①
lever	roJ trave	rev/min	(2B)	lever	rev/min	mm 4	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.50	1140 1200 1220 1300	14,4-17 4,0-10 0 - 8 0 - 1	),6	-	-	-	ca.13	100 200 300 410	7,5-10,2 5,7-8,5 2,5-5,3 0	200 600 1140 1140 550	0,5-2,2 3,8-4,1 8,3 0 0,4-0,6

Torque control travel a = 0,5 mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil tem		Rotational-speed 2b limitation intermediate speed	Fuel deliv	very characteristics 5a	Starting Idle switchir		Torque- travel	control (5)
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1100	123,0-125,0 (121,0-127,0)	1140-1150 *	500	113,5-118,5 (111,5-120,5)		108,5-116, = 12,6-13,0 mm RW		•
					250 130	6,0 mm RW -190(120-200)		./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**BOSCH** 

\* 1 mm less control rod travel than col 2

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed			Sliding sl	eeve travel
deflection	Control	Control rod travel	$\cup$	Degree of deflection	3	Control rod travel	Degree of deflection		Control ro travel		i i	①
	rodtravel mm	mm rev/min		of control lever	rev/min	mm (4)	of control lever	rev/min	mm	(3)	rev/min	mm
1	2	3		4	5	6	7	8	9		10	11
max.	1140	14,4-17	7,6	-	-	-	ca.13	100	min.	7,4	200	0,7-0,9
ca.42		1140-1 1175-12 0-1	205				(3a)	250 310- 450	5,6-5 370 =2 max.1	,0	500 800 100	3,5-3,8 4,9-5,4 7,7

Torque control travel a = 0,5 mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil tem	l stop 💮	Rotational-speed (2b) Ilmitation intermediate speed	Fuel deliv	very characteristics 5a speed 5b	Starting Idle switchir		Torque- travel	Control cod
rev/min 1	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min	cm /1000 strokes	rev/min	travel mm
1100 (2)	111,5-113,5 (109,5-115,5		800 500	(112,5-120,5	) 	13,7-14,3 mm RW	800	11,0+0, 11,4+0, 11,5+0,

Checking values in brackets

# Testoil-ISO 4113

B. Governor Settings 2

2485 + ROV...955

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed		Stidings	leeve travel
deflection	rev/min Control rod travel	Control rod travel	(1a)	Degree of deflection of control	]	Control rod travel	Degree of deflection of control	I	Control rod travel	onding s	1
	mm	rev/min	(2a)		rev/min	mm 4	lever	rev/miñ	mm 3	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca. 29	725 750 770 800	16.0-22 9,3-13 2,5-11 0	,8		-	-	<b>-</b>	-	-	750	4,6
							(3a)		•		

Torque control travel a =

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter	lelivery d stop np 40°C (104°F) (2)	Rotational-speed (2b) Imitation Intermediate speed	Fuel deli high idle s	very characteristics 5a speed 5b	,	fuel delivery 6	Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
·	<del> </del>	<del></del>	<del>                                     </del>				Ĕ	
725	122,5-124,5	765-770*	-	-	-	-	-	-
(3)	120,5-126,5)				200	7,0-11,0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**Festoil-ISO 4113** 

supersedes

WPP 001/4

company:

Hispano HS 115

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

PE 8 AM 90 D 321 RS2014

1 - 8- 7 - 3 - 6 - 5 - 4 - 2

0 -45-90 -135-180-225-270-315^

2,15 + 0,1mm (from BDC)

RQV 275-1500 AB837R

cy1. 7

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pale-tensioning (torque-control valve) mm 6
1000	9	6,6-7,0	0,4			•
	6	2,8-3,6				
200	6	0,1-0,8				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed			Intermediate	rated sp	eed	Lower rated	speed		Sliding sleeve travel	
deflection	rev/min Control	Control rod travel	<b>18</b>	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		1
	rod travel mm	rev/min	(28)	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68		15,0-18 11,2-14 6,2-11 0 - 7	,9	-	-	-	ca.13	200 350 600 800 900	6,4-8,4 3,5-5,5 1,6-2,7 0,1-1 0	220 400 600 1510 -	0-0,9 1,6-2,4 2,6-3,2 8,3
							(3a)				

Torque control travel a

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2  rev/min cm³/1000 strokes		Rotational-speed 2b limitation intermediate speed rev/min 4a			ldle switchii		Torque- travel	Control 5  Control rod travel
1	2	3	4	5	6	7	8	9
1200	86,5-88,5	1590-1600*			100	159,25- 169,25		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

WPP 001/4 FOR 4,2 c 1 1. Edition

PES 4 A 85 C 410/3 RS 2309(1) EP/RSV 575-1100 A7 B572 DL

supersedes company

Ford

PES 6 A 85 C 410/3 RS 2314(2)

575-1100 (500-1100)

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 2,5+0,1-RW9-

mm (from BDC)

Difference between RW 0 - 21 = 4 - 5.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/miri	mm <b>2</b>	cm¥100 strokes 3	100 strokes	mm 2	cm <sup>\$</sup> /100 strokes	mm 6
1000	9	4,9-5,5	0,4			
	6	1,3-2,1				
	15	12,3-13,1				
200	9	3,9-4,4				

Adjust the fuel delivery from each outlet according to the values in E

# **B.** Governor Settings

estoil-ISO 4113

(1) Uppe	r rated speed		Interme	diate rated	speed	(4)	Lower	rated speed	3 Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
ca.59	1115 7125 1135	12,0 6,0 2,2	with	out au	xilia	ca.23 ry sprin	550 3 100 550	4,7 19-21 4,4-5,0	1100	0	
ca.58	1115 1140 1200	8,5-9,5 3,5 0,3-1,0	with	auxil	iary	spring	630	0 - 1	650	0,1-0,3	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	Est oil temp 40°C (104°F)		6 Rotational- speed limitat		el delivery aracteristics	Starting fuel delivery 5 da idle stop			
		cm <sup>3</sup> /1000 strokes	Note changed to ) rev/min 3	rev/min	cm <sup>9</sup> /1000 strokes 5	rev/min	cm <sup>#</sup> /1000 strokes 7		Control rod travel mm 9
(1)	1080	69,0-71,0	1110-1120	500	max. 62,5				
(2)		0 mm RW - out adjustment	on engine						
	(inre	ase by · 1,0 cm	<sup>3</sup> !)						

Checking values in brackets

\* 1 mm less control rod travel than col 2

1.77

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VDT-WPP 001/4 1. Edition

En

PES 6 AM 90 D 410 RS 2015

EP/RSV 200-1100 A1 B1055 DL

supersedes

company engine

MAN D 2156 HMV

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 1,7+0,1

Testoil-ISO 4113

mm (from BDC)

Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
mm (2)	cm¥100 strokes	100 strokes	mm	cm <sup>9</sup> /100 strokes	mm 6
9	5,9-6,3	0,4		3	
6	2,5-3,4				
9	3,2-4,1				
	travel mm 2 9	mm 2 cm\( \frac{100 \text{ strokes}}{3} \) 9 5,9-6,3 6 2,5-3,4	travel mm 2 cm³/100 strokes 3  9 5,9-6,3 0,4 6 2,5-3,4	travel mm 2 cm³/100 strokes 2  9 5,9-6,3 0,4 6 2,5-3,4	travel mm 2 cm³/100 strokes 3

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

(1) Uppe	r rated speed	rev/min	Interme	diate rated	speed	4	Lower	rated speed	(3) to	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control- lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4 .	5	6	7	8	9	10	11
ca.65	1100	16,0				ca.27	200	7,5	1080	0
	1150 1200	12,6 8,0	witho	out aux	kiliar	y spring	100 200	19-21 7,2-7,8	850	0,2-0,6
(2a)	1180 1250 1400	8,2-11,0 3,5-6,1 0,3-1,0	with	auxil	iary s	pring	400 650	2,7-5,2	350	0,3-0,7

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limital		Fuel delivery characteristics		uel delivery 5	4a Idle stop	
rev/min	emp 40°C (104 F) cm3/1000 strokes	Note changed to ) rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>\$</sup> /1000 strokes	rev/min	Control rod travel mm
<u> </u>	100 0 100 0	1100 1105			400	45 7 46 0	8	9
1100	100,0-102,0	1120-1135	800 500	96,5.99,5 max. 95,0	100	15,7-16,3 mm RW		
Set 1	ower delivery a	t inner leve	r!					
1100	81,0-83,0							
L					L			1

Checking values in brackets

\* 1 mm less control rod travel than col 2

40

WPP 001/4 MB 5,7 q 3 5. Edition

En

PES 6 A 90D 410RS 2293 RS 2293Z

RSV 350-1300A0B1105DL(1) 350-1300A0B1101DL(2) supersedes company 8.81 Daimler Benz

engine 93 NW/

93 kW(125PS)(1) 70 kW( 94PS)(2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

(2,10-2,30)

Port closing at prestroke

Festoil-ISO 4113

2,15-2,25)

mm (from BDC)

Rotational speed rev/min	control rod travel mm 2	Fuel delivery ••2293 cm³/100 strokes	Difference cm³/ 100 strokes 4	control rod travel mm	cm <sup>9</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm 6
1300	9,5-9,6	6,2-6,3	0,3(0,45)	8,2-8,3	4,0-4,1	
	6,3-6,5 10,2+0,2 10,3+0,1	0,4-0,9 C,Col.4-5	0,2(0,4) 0,4(0,55)	6,9-7,1	0,7-1,1	

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

..2293 with 1105DL (1)

1 Прре	er rated speed		Interm	ediate	rated	speed	(4)	Low	er rated speed	(3) To	rque control
Degree of deflection of control lever	control rod travel mm	Control rod travel mm rev/min 3	4 .	5		6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod   travel   mm
loose	800	0,3 - 1,0	-		-	-	ca.28	350	5,9	1300	9,5-9,6
1	X =	5,5						100	min19,0	800	10,2-10,4
ca.64	8,5 4,0 1550	1340-1350 1380-1410 0,3-1,7				·	490	350 700 -550 =	6,3-6,5 max.1,0 2,0	500	10,3-10,4

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

<b>6</b>	emp 40°C (104°F)	6 Rotational- speed limitat	11301	uel delivery naracteristics	Starting I	fuel delivery 5	4a Idle stop	
rev/min	cm <sup>3</sup> /1000 strokes	Note changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>4</sup> /1000 strokes	rev/min	Control root travel mm
1300	62,5-63,5 (60,5-65,5)	1340-1350*	800 500	60,0-62,0 (58,0-64,0) 54,0-56,0 (52,0-58,0)	100	79,25-89,25 13,7 - 14,3 mm RW		6,4

Checking values in brackets

\* 1 mm less control rod travel than col 2

2.82

**BOSCH** 

# **B.** Governor Settings

..2293 Z with RSV-1101 DL (2)

	r rated speed Control rod travel mm		intermed	diate rated		Control- lever deflection in degrees 7			3 To	rque control Control rod travel mm
1oose	800°	0,3-1,0 3,0	-	_	•	ca.20	350 100	6,5 min.19,0	1300 800	8,2-8,3 9,0-9,2
ca.66		1340-1350 1370-1400 0,3-1,7					350	6,9-7,1 max.1,0 580 =2,0	500	9,4-9,5

# C. Settings for Fuel Injection Pump with Fitted Governor

<b>W</b>	ill-load stop	6 Rotational- speed limitat		iel dalivery maracteristics	Starting t	uel delivery 5	48 tdle stop	
Test oil te rev/min 1	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm³/1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes	rev/min 8	Control rod travel mm
1300	40,5-41,5 (38,5-43,5)	1340-1350*	800 500	42,0-45,0 (40,0-47,0) 36,5-38,5 (34,5-40,5)	100	13,7-14,3 mm RW	350	7,0

Checking values in brackets

Testoil-ISO 4113

\* 1 mm less control rod travel than col. 2

# D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
	÷		

Notes:

(1) when n =

rév/min and gauge pressure = bar ( = maximum full-load control rod travel)

En

WPP 001/4 KHD 1 o 4. Edition

En

II-ISO 4113

PES 6 A 95 D 410 RS 2625 Komb.-Nr. O 400 876 305 RSV 325-1150 A8B 674 DL A8C 674 L supersedes 3.84

company: KHD

engine. B F 6 L 913 B

Excavator

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

1,9 - 2,0 (1,85-2,05)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1150	11,4+0,1	8,0 - 8,2	0,3(0,6)			
325	7,2-7,4	1,6 - 2,2	0,3(0,5)	·		
L						<u> </u>

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Degree of deflection of control	rated speed	Control rod travel	Intermediate Degree of deflection of control lever	rated spe	Control rod travel	4 Lowe Degree of deflection of control tever	r rated spe	Control rod travel	3 Tor	que control Control rod travel
1	2	3	4	5	6	7	8	9	10	11
loose	800 X =	0,3-1,0 3,0	-	•	-	ca. 15	325 325	6,8 7,2-7,4	1150 500 1000	11,4+0, 12,1+0, 11,8+0,
⑤ <sup>a. 50</sup>	10,4 4,0 1325	1190-1200 1265-1295 0,3 - 1,7						45 = 2,0		

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-los	ad stop	6 Rotational- speed limitat.		el delivery tracteristics	Starting Idle	fuel delivery	5a) Idle stop	
Test oil temp rev/min 1	cm <sup>3</sup> /1000 strokes	Note: changed to rev/min 3	rev/min cm³/1000 strokes 4 5		rev/min cm³/1000 strokes 6 7		rev/min 8	Control rod travel mm
LDA 1150	0,7 bar 8 <sup>0</sup> ,0 - 82,0 (78,0 - 84,0)	1190-1200*	LDA 800 LDA 500	83,0-86,0 (80,5-88,5) 0 bar		116,5-126,5 (113,5-129, = 15,9 - 16,4 mm RW	5)	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.84

KHD 1 o

\_ 2 \_

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution , Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 6 A. RS 2625	0,7		12,2 - 12,3
with A8B 674 DL A8C 674 L		0	11,1 - 11,2
•		0,36	11,9 - 12,0
		0,2	11,1 - 11,3

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 6,1e1

En

5. Edition

PES 6 A 95 D 410 RS 2471 Komb.-Nr. 0 400 876 275

RSV 325-1150A 8 B 674 DL A 8 C 674 DL supersedes6.83

company: KHD

engine: BF 6 L 913 C 132 kW/2300 min<sup>-1</sup>

A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (1,85-2,05) mm (from BDC)

or closing at presi		90-2-00				
Rotational speed		Fuel delivery		Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1150	11,8+0,1	10,8-11,0	0,3(0,6			
325	7,2-7,4	1,6 - 2,2	0,3 (0,5			
÷.						

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper Degree of deflection of control lever	reted speed rev/min 2	Control rod travel mm 3	Intermediate Degree of deflection of control lever	rated spe rev/min 5	ed Control rod travel mm 6	Degree of deflection of control lever		ed Control rod travel mm 9	ı	que control Control rod travel mm	
loose	800 x =	0,3-1,0 4,75	<u>-</u>	-	-	ca.15	325 100	6,8 min. 19	500	11,8+0	1
ক্ত্ৰ. <sup>55</sup>		00=10,8 65= 4,0 3-1,7					325 615 <b>-</b> 67	7,2-7,4 5=2,0			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	oad stop	6 Rotational- speed timitat.		el delivery tracteristics	Starting Idle	fuel delivery	5a) Idle	e stop
Test oil tem rev/min 1	p. 40°C (104°F) cm³/1000 strokes 2	Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes	rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 108,0-110,0 (106,0-112,0)	1190-1200*	LDA 850 LDA	0,7 bar 102,5-105,5 (100,5-107,5) 0 bar 62,0-64,0 (59,5-66,5)	100	120,0-130, (117,0-133, = 15,9 - 16,4 mm EW	ი მ 325	6,8

Checking values in brackets

<sup>\* 1</sup> mm less control rod travel than col. 2

KHD 6,1 e 1 - 2 -

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travet difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
2471 with 674 DL	0,7 bar		11,8 - 11,9
		0	10,6 - 10,7
		0,27	11,6 - 11,7
		0,1	10,8 - 11,0

Notes.

(1) when n =

rev/min and gauge pressure

bar (= maximum full-load control rod travel)

40

WPP 001/4 MWM 6,2 d 6. Edition

En

PES 6 A D 320/3 RS 2483

RSV 325-1200 A2 B 777DR Change of governor to RSV 400-1200 A2B 777 R supersedes 3.80 MWM TD 228-6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,15-2,25 (2,10-2,30)

RW 9 mm (from BD)

Difference between CRT9 + 21 3.5-4.5°

, 1010a.	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1180	10,5-10,6	7,3-7,4	0,3(0,45)		·	
325 750/500	7,4-7,6 	0,6-1,2 C,Col.4-5	0,2(0,4) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

(1) Uppe	r rated speed		Intermed	tiate rate	d speed	4		rated speed	11 5 /	rque control
Degree of deflection	travel	Control rod travel mm rev/min				Control- lever deflection	rev/min	travel mm	revi min	travel mm
ot control lever	mm 2	3	4 .	5	6	in degrees	8	9	10	11
ca.45		10,5-10,6				ca.19	325	6,5	1180	10,5-10,6
		1230=9,5 285=4,0	with	without auxilian		ry sprin	9 100 325	min.19 6,4-6,6	750 500	11,3-11,4
28	1225 1300 1400	9,5-9,6 3,2-4,4 0,3-1,7	with	auxil	iary	pring	550-560 700	= 2,0 0 - 1		-

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

<b>E</b>	II-load stop	Rotational- speed limitat				uel delivery 5	4a) Idle stop	
rev/min	cm <sup>3</sup> /1000 strokes	changed to ) rev/min 3	rev/min 4	cm³/1000 strokes	rev/min	cm\$/1000 strokes	rev/min 8	travel mm 9
LDA 1180 LDA 750	0,7 bar 73,0-74,0 (71,0-76,0) 0,7 bar 79,0-82,0 (77,0-84,0)		LDA 500 LDA 500	0,7 bar 72,0 - 74,0 (70,0 - 76,0) 0 bar 56,5 - 59,5 (54,5 - 61,5)	325	6,25 - 12,25	325	6,5

Checking values in brackets

\* 1 mm less control rod travel than col 2

5.80

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

Testatn =

500

rev/min decreasing pressure – in bar gauge pressure

MWM 6,2d

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
			44.5	44.7
2483 with 777 DR	0,68		11,6 -	11,/
		0,09	10,6 -	10,7
		0,05	9,4 -	9,6
		0	9,0 -	9,1
	Annual State of the State of th			

Notes.

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

H21

40

WPP 001/4 MB 3,8k1

3. Edition

Er

PES 4 A 90 D 410 RS 2294

EP/RSV 750-1400 AO B2022 DL

supersedes 11.80
Company Daimler-Benz

ompany OM 314 engine (85 PS)

1 - 3 - 4 - 2 0-90-180-270

All test specifications are valid for Bosch Fuel Injection Fump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,15-2,25 (2,10-2,30)

mm (from BDC)

RW = 10.5 mm

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cmi¥100 strokes 3	Difference cm³/ 100 strokes	Control rod trayel mm	Fuel delivery cm <sup>9</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1345	10,5	7,1 - 7,3	0,3(0,45)			Ü
	+ 0,1				_	
750	5,9 - 6,1	1,6 - 2,2	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Degree of deflection of control lever	r rated speed   Control rod   travel   mm   2		Interm	ediate rat	ed speed	Control- lever deflection in degrees 7.	Lower rev/min 8	rated speed Control rod travei mm	3 to	rque control  Control rod  travel  mm
loose	800 X =	0,3-1,0 = 3,7		<del></del>		ca.30	750 100	6,0 min.19	450	± 0,1 10,6
ca.51	1435-14	390 = 9,5 140 = 3,6 0,3-1,7					750 765-795 820	5,9-6,1 = 2,0 0-1	600	12,3

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

	II-load stop	6 Rotational- speed limitat		iel delivery paracteristics	Starting fuel delivery 5 4a Idle stop			
1	cm <sup>3</sup> /1000 strokes	Note changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>9</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
1345	71,5 - 72,5 (69,5 - 74,5)	1385-1390*	· .		100	84,25 - 91,25	750	6,0

Checking values in brackets

\* 1 mm less control rod @ravel than col 2

2.81

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Ktz. Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50: D-7000 Stuttgart 1. Printed in the Federal Republic of German, imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 MB 5,7w3

2. Edition

En

PES 6 A 90 D 410

1 - 5 - 3 - 6 - 2 - 4 0 -60 -120-180-240-300

RS 2569

RSV 350 - 1275 AO B 1138 L

supersedes 11.80

Daimler-Benz

OM 352

62 kW (84 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

**estoil-ISO 4113** 

(2,20-2,40)2,25-2,35

mm (from BDC)

RW = 10.5 mm

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm¥100 strokes 3	cm³/ 100 strokes 4	mm 2	cm <sup>9</sup> /100 strokes 3	mm 6
1250	8,4-8,5	4,0 - 4,1	0,3(0,25)			
350	8,4-8,6	0,8 - 1,4	0,2(0,4)			
750	-	C, Col. 4-5	0,4(0,3)			
600			0,4(0,3)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Орре	r rated speed	rev/min	Intermediate rated speed			(4)				3 Torque control	
Degree of deflection of control	Control rod travel mm	Control rod travel mm rev/min				Control- lever deflection	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
lever 1	2	3	4 .	5	6	in degrees 7	8	9	10	11	
loose	800	0,3-1,0				ca.35	350	8,0	1250	8,4-8,5	
	x = 6	,0	j				350 715-785	8,4-8,6	785 500	9,1-9,3	
ca.72	1330-13	300 = 7,4 360 = 4,0 0,3-1,7					715-76	) =2,0	500	9,8-9,9	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

9	ill-load stop emp 40°C (104°F)	Rotational speed limitat	11.361	el delivery aractenstics	Starting f Idle	Starting fuel delivery 5 Idle		da Idle stop	
rev/min	cm <sup>9</sup> /1000 strokes 2	Changed to ) rev/min 3	rev/min 4	cm <sup>9</sup> /1000 strokes 5	rev/min 6	cm <sup>9</sup> /1000 strokes 7	rev/min 8	travel mm 9	
1250	40,5-41,5 (39,5-42,5)	1290-1300*	750 600	39,5-41,5 (38,5-42,5) 37,0-39,0 (36,0-40,0)	100	79,25- 89,25	350	8,5	

Checking values in brackets

\* 1 mm less control rod travel than col 2

2.81

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of German-Imprime en République Federale d'Allemagne par Robert Bosch GmbH.

40

WPP 001/4 MB 5,7w4 1. Edition

<u>En</u>

PES 6 A 90 D 410 RS 2569

RSV 350-1300 A0B 1137 L

supersede Daimler-Benz company OM 352 ECE engine 70 kW (95 PS)

1 - 5 - 3 - 6 - 2 - 4 0 -60 -120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

2,25-2,35

mm (from BDC)

RW = 10.5 mm

Control rod travel	Fuel delivery cm3/100 strokes	Difference cm³/ 100 strokes	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning itorque-control valve)
2	3	4	2	3	6
9,1	4,2 - 4,3	0,3(0,45)			
+0,1					
8,4-8,6	0,8 - 1,4 C, Col. 4-5	0,2(0,4) 0,4(0,55)			
	rravel (2) 2 9,1 +0,1	travel mm 2 cm¥100 strokes 3  9,1 4,2 - 4,3 +0,1	travel cm <sup>3</sup> /100 strokes cm <sup>3</sup> /100 strokes 4 100 strokes 4 100 strokes 4 100 strokes 4 100 strokes 4 10,1	travel	travel

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed   Control   d   travel   mm   2	rev/min Control rod travel mm rev/min 3	luterme	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod travel  mm	3 To	rque control Control rod travel mm
loose	x =	0,3-1,0 6,0				ca.14	350 350	7,9 9,1-9,3	1300 800 500	9,1-9,2 9,8-10,1 10,2-10,3
ca.53	1360-1	350=8,1 390=4,0 ,3-1,7					650-710	= 2,0	500	10,2-10,3

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

100	ill-load stop emp 40°C (104°F)	Rotational- speed limitat Note changed to )  Rotational- characteristics			Starting fildle	uel delivery 5	Idle stop Control rod	
rev/min	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm <sup>9</sup> /1000 strokes 7	rev/min 8	mm 9
1300	42,0-43,0 (40,0-45,0)	1340-1350*	500	34,5-37,5 (32,5-39,5)	100 350	79,25-89,25 16,2-16,6 mm RW 8,25-14,25		8,5

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.81

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 MB 5,7w6 1. Edition

PES 6 A 90 D 410 RS 2569

RSV 350-1400 A0B 1134 L

supersedes =

Daimler-Benz company

JM 352

engine 95 kW (130 PS)

1 - 5 - 3 - 6 - 2 - 4 0 - 60-120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke 2,25-2,35

estoil-ISO 4113

rrim (from BDC)

RW = 10.5 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cmil/100 strckes 3	onsl/ 100 strokes 4	mm 2	cm <sup>\$</sup> /100 strokes	mm 6
1400	10,7	6,0 - 6,1	0,3(0,45)			
350 500	+0,1 8,3-8,5	0,7 - 1,3 C, Col. 4-5	0,2(0,4) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

(1) Uppe	r rated speed		Interm	Intermediate rated speed			Lower rated speed			rque control
Degree of deflection of control lever 1	Control rod travel mm	travel mm rev/min	4 .	5	6	Control- lever deflection in degrees 7	rev/min	travel mm	rev/min	travel +0,1
loose	800	0,3-1,0				ca.27	350	7,5	1400	10,7
	x = 5	,0					350	9,3-9,5	900	11,3
ca.68	1485-1	450=9,7 515=4,0 ,3-1,7				•	635 <b>-</b> 696 =	2,0	300	12,0

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Fu	ill-load stop	6 Rotational- speed limitat		iel delivery paracteristics	Starting fuel delivery 5		(4a) Idl	e stop
rev/min	emp 40°C (104°F) cm3/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>9</sup> /1000 strokes	rev/min 8	Control rod travel mm
1400	60,0-61,0 (58,0-63,0)	1440-1450*	500	52,5 - 55,5 (50,5 - 57,5)	100	79,25- 89,25 16,2-16,6 mm RW		

Checking values in brackets

\* 1 mm less control rod travel than col 2

2.81

Geschaftsbereich KH Kundendienst Kfz-Ausrustung 1980 by Robert Bosch GmbH Postfach 50 D-7000 Stuttgart 1 Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH

WPP 001/4 MB 5,7w8

1. Edition

En

PES 6 A 90 D 410 RS 2569 RSV 350-1300 AOB 1140 L

Daimler-Benz company

OM 352

81 kW (110 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings (2,20-2,40) Port closing at prestroke 2,25-2,35

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm¥100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) cim 6
1300	10,1	5,3-5,4	0,3(0,45)			
350 500	+0,1 8,6-8,8 	0,9-1,5 C, Col. 4-5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

Uppe	er rated speed	I rev/min	interm	ediate rat	ed speed	(4)	Lowe	rrated speed	(3) to	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	<u> </u>			ca.20	350 350	2,0* 8,6-8,8	1300 1050	10,1-10,2
ca.61	1450-1	350=9,1 480=4,0 ,3-1,7					630-690	= 2,0	500	11,3-11,4

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

20	ill-load stop emp 40°C (104°F)	Rotational-speed limitat Note changed to 1			Starting fillelight	uel delivery 5	Control rod	
rev/min	cm³/1000 strokes 2	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 6	cm <sup>#</sup> /1000 strokes 7		mm 9
1300	53,0-54,0 (51,0-56,0)	1340-1350*	500	45,0-47,0 (43,0-49,0)	100	79,25- 89,25	350	8,7

Checking values in brackets

\* 1 mm less control rod travel than col. 2



40

WPP 001/4 HAN 10,8 a 1 5. Edition

En

PE 6 A 95 D 320 RS 2364 RS 2557 EP/RSV 35

350-1100 A8 B1070R A8 B1127R supersede 8.80 company MF-Hanomag D 963 A1

Test cold-start device according to VDT-I-DAF 004, page 2.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,15-2,25 (2,10-2,30)

mm (from BDC)

# Festoil-ISO 4113

Rotatio speed rev/min		Control rod travel mm 2	Fuel delivery cm3/100 strokes 3	Difference cr-3/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>9</sup> /100 strokes 3	Spring pre tensioning (torque-control valve) mm
11	100	13,5	13,5-13,8	0,3(0,6)	13,5	13,1-13,3	n 1100
		+0,1			+0,1		
3	350	6,7-6,9	1,4-2,0	0,3(0,5)	6,6-6,8	1,4-2,0	n 350
9	500		C, 4-5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

1 Uppe	r rated speed	rev/min	Intermediate rated speed			4		rated speed	3 Torque control		
Degree of deflection	Control rod travel	Control rod travel				Control-		Control rod travel		Control rod travel	
of control lever	mm	mm rev/min				deflection in degrees	rev/min	mm	rev/min	mm	
1	2	3	4 .	5	6	7	8	9	10	11	
loose	800	0,3-1,0				63.24	350	5,5	480	13,5-13,6	
	x =	5,5					100	min. 19	400	12 0 14 2	
ca.57	12,5	1140-1150					350 435-495	5,9-6,1 = 2,0	400	13,8-14,2	
(2a)	4,0 1380	1205-1235 0,3 - 1,7	9	,			600	0 - 1			
		- ,	<u> </u>			<u> </u>	<u> </u>		<u> </u>	İ.,	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

l-load stop	6 Rotational- speed limitat	16361	•	Starting fidle	iuel delivery 5	4a idle stop		
mp=40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>\$</sup> /1000 strokes	rev/min 8	Control rod travel mm	
134,0-136,0 (132,0-138,0)	1140-1150*	500	131,0-134,0 (129,0-136,0)	100	20-20,5 mm RW**			
r	mp 40°C (104°F) cm <sup>3</sup> /1000 strokes 2 134,0-136,0	speed limitat Note changed to ) rev/min 3 134,0-136,0 1140-1150*	speed limitat Note changed to ) rev/min 3 40.00 strokes 2 134,0-136,0 1140-1150* 500	speed limitat Note characteristics  Note changed to )  rev/min cm³/1000 strokes  2	speed limitat Note characteristics Idle  Note changed to ) rev/min cm³/1000 strokes 2 4 5 6  134,0-136,0 1140-1150* 500 131,0-134,0 100	speed limitat Note changed to ) rev/min cm³/1000 strokes 2 rev/min cm³/1000 strokes 3 rev/min cm³/1000 strokes 6 7	speed limitat Note changed to ) rev/min 2 characteristics   Idle   .	

Checking values in brackets

\* 1 mm less control rod travel than col 2

2.81

**BOSCH** 

1 Uppe	r rated speed	rev/min	Intermediate rated speed			Lower rated speed			3 Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7		Control rod travel mm	rev/min	Control rod travel mm	
1oose	800	0,3-1,0		<u> </u>	<del></del>	ca.25	350	62	1100	13,5	
	x =	5,5					100	min.19,0	480	13,5-13,7	
ca.57		1140-1150 1205-1235 0,3-1,7					350 490-550 600	6,6-6,8 = 2,0 1,0	400	13,8-14,2	

# C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> Fu	II-load stop	6 Rotational- speed limitat.	el delivery aracteristics	Starting f	uel delivery (5)	4a Idle stop		
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note: changed to) rev/min 3	rev/min	cm³/1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	130,0-132,0 (128,0-134,0)	1140-1150*	500	126,5-129,5 (124,5-131,5)	100	20-20,5 mm RW**		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# **B.** Governor Settings

Degree of deflection of control lever	deflection of control ever 2 3			nediate rat	ed speed	Control- lever deflection in degrees 7	Lowe rev/min 8	r rated speed   Control rod travel mm	rev/min	rque control  Control rod  travel  mm  11
									4	
<b>2a</b>										

# C. Settings for Fuel Injection Pump with Fitted Governor

	II-load stop emp. 40°C (104°F)	Rotational- speed limitat.		el delivery aracteristics	Starting f	uel delivery 5	<b>C</b>	e stop Control rod
rev/min	cm <sup>3</sup> /1000 strokes 2	changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm 9
					1	[ 		

estoil-ISO 4113

WPP 001/4 0MB 8,1c

1. Edition

PES 6 MW 100/720 RS 1012 0 403 446 133

ROV 425-1000 MW 36-1

OM Brescia company 8365.25.530

121,5 kW (165 PS)

1 - 5 - 3 - 6 - 2 - 4

 $0 -60 -120 -180 -240 -300 \pm 0.5 (0.75)$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2.85 - 3.05)

mm (from BDC)

RW 9.0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,7+0,1	9,1 - 9,3	0,35(0,6)			
425	6,4-6,5	1,55-1,75	0,35(0,55)			
700	12,6+0,1		0,5 (0,7)			
500	11,5+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in [

## **B. Governor Settings**

Upper rated s	peed			Intermediate	rated spe	ed		Lower rated	speed	, 1	Sliding sl	eeve travel
deflection of control	rev/min Control rod travel	mm		Degree of deflection of control lever	rev/min	Control ro travel	d (4)	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm (1)
lever	mm 2	3		4	5	6	0	7	8	9	10	11
max.	1100	15,2-17,	,8	-	-	_		ca.26	425	5,4-6,5		
	1200	0 - 1,	,0						100	min.8,0		
ca.51	10,7	1040-105	50						490-	550= 2,0		
	4,0	1120-115	50					<b>3</b> a				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		Rotational-speed 2b limitation intermediate speed	termediate speed		Starting Idle switchir	_	Torque- travel	Control rod
rev/min cm³/1000 strokes		rev <i>ir</i> nin (48)	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	tev/min	mm .
١,	2	3	4	5	6	7	8	9+0,1
LDA	0,6 bar		LDA	0,6 bar			500	12,5
1000	91,0-93,0 (89,0-95,0)	1040-1050*	700	102,0-104,0 (99,0-106,0)	100	19,0 - 21,0 RW	700 800	12,6 12,4
			LDA 500	0 bar 71,5-73,5 (69,5-75,5)		160,0-180,0	950 1000	11,7 11,7

Checking values in brackets

1 mm less control rod travel than col. 2

4.82 Geschäftsbereich KH. Kundendienst, Kfz-Ausrustung & by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany Imprime en Republique Federale J'Allemagne par Robert Bosch GmbH

-2-

Test at n =

500

rev/min

pressure – in bar gauge pressure

OMB 8,1 c

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1012 with RQV-MW 36-1	0,36	0,6 0 0,31	12,2 - 12,3 12,6 - 12,7 11,5 - 11,6 11,8 - 11,9

Notes

Testoil-ISO 4113

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Festoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 8,1d 1. Edition

En\_

PES 6 MW 100/720 RS 1012 0 403 446 127

RQV 425-1100 MW 36

supersedes"

ompany: 8365.25.580 engine: 129 kW(175 PS)

1 - 5 - 3 - 6 - 2 - 4

 $0 - 60 - 120 - 180 - 240 - 300 \pm 0.5 (0.75)$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

00 05) mm (from BDC) 10,5 mm RW

POLICIOSING at bies	( )	2.85-3.05)				
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery cm³/100 strokes	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>3</sup> /100 strokes	100 strokes	mm 2	3	6
	ļ				<del>                                     </del>	
1100	11,5+0,1	9,6-9,8	0,35(0,6)			
425	5,8-6,0	1,15-1,55	0,35(0,55)			
700	12,4+0,1		0,5 (0,7)			
500	11,2+0,1	1	0,35(0,5)			
1						

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Upper rated s	speed	<del></del>		Intermediate	rated spe	eed	Lower rated	speed	1	Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min		Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
max.	1100	15,2-17	,8	-	-	-	ca.14	425	5,8-6,0		
	1300	0- 1	,0					100	min.7,5		
ca.49	10,5	1140-115	50					470-	-530 =2,0		
	4,0	1185-12	15				(3a)				

Torque control travel a =

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil tem		Rotational-speed 2b limitation intermediate speed	Fuel deliv high idle s	ery characteristics 5a	characteristics 5a Starting fuel delivery 6 Idle switching point		Torque- travel	Control 6  Control rod
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min cm³/1000 strokes		mm
1	2	3	4	5	6	7	8	9
LDA	0,5 bar		LDA	0,5 bar		·	700	12,4+0,1
1100	96,0-98,0 (94,0-100,0)	1140-1150*	700	101,0-105,0) (99,0-1,7,0)		RW max. 19 min. 70,0	1000	11,5+0,1
			LDA 500	0 bar 75,0-77,0 (73,0-79,0)	100-	220 (80 <b>-</b> 240)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.82



Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

OMB 8,1d

-2-

-		
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l	-	
l	4	
I	S	
	4	
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	St	

Pump/governor	Setting		Measurement		Control rod travel- difference
	Gauge pressure =	bar	Gauge pressure =	bar	mm (1) .
RS 1012 with RQV-MW 36	0,27		0,2		12,1 - 12,2 11,5 - 11,7
			0,5		12,4 - 12,5
			0		11,2 - 11,3

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

40

WPP 001/4 KHD 6,1 k

3. Edition

PES 6 A 85 D 410/3 RS 2592

Komb.-Nr. 0 400 836 026

RQV 300-1250 AB 1089 L

supersedes 9.82 KHD company: BF 6 L 913

engine

All test

A. F

Port clo

Rotatio

1

125

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(2.15-2.35)

mm (from BDC)

		2,10 2,007				
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Centrol rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1250	11,9+0,1	9,1-9,2	0,3(0,45)			
300	6,8-7,0	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Upper rated s	peed rev/min	Control rod	$\bigcirc$	Intermediate	rated sp	eed Control rod	Lower rated Degree of	speed	Sliding sleeve travel		
deflection of control	Control rod travel mm	travel	(a) (2a)	deflection of control	rev/min	travel 4	deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	(1)
1	2	3		4	5	6	7	8	9	10	11
max.	1250	15,2-17	,8	-	-	~	ca. 14	100 300	min.8,4 6,8-7,0	250 550	0,5-0,7 3,4-3,6
ca. 68	10,9 4.0							300	0,0-7,0	900 1250	5,2-5,4 8,1
1	1500						325-500	}		.230	0,1
		0.40					(3a)				

Torque control travel a = 0,40 mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roi Test oil ten rev/min		intermediate speed	mediate speed (5b) Idle switching point		ng point	Torque- travel	Control 5  Control rod travel	
1	2	3	4	5	6	7	8	9
LDA 1250	0.7 bar 51.0-92,0 (89.0-94,0)	1290-1300*	LDA 300 LDA 500	0,7 bar 86,5-89,5 (84,0-92,0) 0 bar 62,5-65,5 (60,5-67,5)	100	110,0-120,0 (107,0-123,0		11,9+0 12,3+0 12,2+0

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10.85

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrustung. & by Robert Bosch GmbH, D-7 Stuttgart 1, Posifach 50 Printed in the Federal Republic of Germany Imprime en République Federale d'Allemagne par Robert Bosch GmbH.

KHD 6,1 k

-2-

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 6 ARS 2592 + AB 1089 L	0,7	0 0,40 0,28	12,2-12,3 10,8-10,9 12,0-12,1 11,3-11,5

Notes.

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

WPP 001/4 MAN 16.0 c 5

1. Edition

PE 10 A 95 D 520/5 LS 2501 RQV 250-1250 AB 1051 DR

company MAN

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4 0 - 27 - 72 - 99 - 144 - 171 - 216 - 243 - 288 - 315° - 0,5° (-0,75°)

D 2530 MTXF 294 kW (400 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Cy1. 10

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	1979 <b>2</b>	cm <sup>3</sup> /100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1250	12,3+0,1	12,5 - 12,6	0,3(0,6)			]
250 750 500	5,9-6,1 12,3+0,1 10,0+0,1		0,3(0,5) 0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

D	pper r	of	rev/miก	Control rod	(a)	Intermediate Degree of	rated spe	Contro	l rod	Lower i Degree deflecti	of	speed	Control travel	rod	Sliding s	leeve travel
0	eflecti f conti ever		Control rod travel mm	mm -	ニ	deflection of control lever	rev/min	travel mm	4	of cont lever		rev/min 8	mm 9	3	rev/min	mm 11
ŀ	ca.	50	1275	14,4-17,4	4	-	-		-	ca.	13	100 250	min. 5,9-	•	200 550	0,7 <b>-</b> 0,8 4,3 <b>-</b> 4,6
	ca.	48	11,5 4,5 1500	1290-1300 1365-1390 0 - 1,0	5							320-	380=2	Omm	900 1250	5,7-6,1 8,3
					i				_	38)						

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

	1 stop np. 40°C (104°F) 2	Rotational-speed (2b) imitation intermediate speed (ev/min (4a)	Fuel delivery characteristics (5) high idle speed (5b) rev/min   cm³/1000 strokes		Starting idle switchin rev/min	•	Torque- travel	Control 5  Control rod travel mm
rev/min	cm-/1000 strokes	3	4	5	6		В	9
LDA 1250	0,5 bar 123,0-125,0 (121,0-127,0)	1290-1300 *	LDA 750 LDA 500	0,5 bar 119,5-122,5 (117,5-124,5) 0 bar 76,5-79,5 (74,5-81,5)		169,0-179,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.82

MAN 16,0 c 5

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	<del>- 1</del>	Measurement	diminution , Control rod travel- difference
	Gauge pressure =	bar	Gauge pressure = bar	mm (1) ,
PE10ALS2501	0,5	- · · · · · · · · · · · · · · · · · · ·		12,3 - 12,4
withAB1051DR			0,29	11,6 - 11,9
			0,21	10,5 - 10,7
			0	10,0 - 10,1

Notes.

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Festoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 1 WPP 001/4 MAN 16,0 c 4 and Governors

1. Edition

PE 10 A 95 D 520/5 LS 2501

RQV 250-1150 AB 1069 DR

company:

engine

D 2530 MTX

MAN

265 kW (360 PS)

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4 0 -27 -72 -99 -144 -171 -216 -243 -288 -315° - 0,5° (-0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	(1.65-1.85) Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1150	11,7+0,1	12,0 - 12,2	0,3(0,6)			
250 750 500	5,9-6,1 12,1+0,1 9,9-10,0		0,3(0,5)			<u> </u>

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed	Sliding sleeve travel		
deflection	rev/min Control rod travel	travel	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		1
	mm 2	rev/min (2a)	lever	rev/min 5	mm 4	lever	rev/min 8	mm (3) 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 12	100 250	min. 7,5		0,7-0,9
ca. 44	10,7 4,0 1400	1190-1200 1240-1270 0 - 1,0	:					15,9-6,1 385=2,0mm max. 1,0		3,8-4,0 5,2-5,5 7,7
						(3a)				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)  rev/min   cm³/1000 strokes		limitation intermediate speed	tation mediate speed high idle speed 50		Starting fuel delivery (Idle switching point		Torque- travel	Control 5  Control rod travel
rev/min 1	2	3	4	5	6	7	8	9
LDA 1150	1,2 bar 118,5-120,5 (116,5-122,5)	1190-1200*	LDA 750 LDA 500	1,2 bar 118,5-121,5 (116,5-123,5) 0 bar 78,0- 81,0 (76,0- 83,0)	250	169,0-179,0 16,7-17,3 mm RW RW 7,0 mm	500 825	11,7+0, 12,1+0, 11,9+0, 11,7+0,

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.82

MAN 16,0 c 4

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting  Gauge pressure = bar	Measurement  Gauge pressure = bar	diminution Control rod travel difference mm (1)
PE10ALS2501 withAB1069DR	0,9	0,33 0,26 0	11,7 - 11,8 11,5 - 11,6 10,5 - 12,1 9,9 - 10,0

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 KHD 1 e 5 1. Edition

PE 8 A 95 D 410 LS 2609 RQV 300-1250 A B 1128 L

1-8-7-2-6-5-4-3 je  $45^{\circ} \pm 0.5^{\circ}$  (±  $0.75^{\circ}$ )

supersedes

KHD company:

BF 8 L 413 F engine: 235 kW(320 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1250	11,5+0,1	11,5-11,7	0,3(0,6)			
300 850 500	6,4-6,6 12,0+0,1 10,2+0,1		0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

	Upper rated speed			Internediate rates speed			speed	Sliding sleeve travel		
DOD:	rev/min Control rod travel mm	Control rod travel mm rev/min 28	Degree of deflection of control lever	rev/min	travel 4	Degree of deflection of control .ever	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca.15	100	min.8,0	250 600	0,5-0,7 2,9-3,2
ca.68	1	1290-1300 1375-1395					1	730=2,0mm	1	4,9-5,1 7,7
	1450	0 - 1,0				<b>3</b> e				

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed 2b timitation intermediate speed			Starting Idle switchin		Torque- travel	Control 5  Control rod travel
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar	1290-1300*	LDA	0,7 bar	100	129,0-139,0	1250	11,5+0,1
1250	113,5-115,5		850	118,0-121,0		15,2-15,6	500	12,1+0,1
	(111,5-117,5)			(116,0-123,0)		mm RW	1050	11,7+0,2
			LDA 500	0 bar 77,0-80,0		İ		
				(75,0-82,0)			<u> </u>	

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Checking values in brackets

\* 1 mm less control rod travel than col 2

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

KHD 1 e 5

-2-

Testoil-ISO 4113

increasing		KHD 1 e 5
Setting	Measurement	Control rod travel- difference
Gauge pressure = bar	Gauge pressure = bar	mm (1) .
0,7	0 0,43 0,22	12,0 - 12,1 10,2 - 10,3 11,7 - 11,8 10,7 - 10,9
	Setting  Gauge pressure = bar	Setting Measurement  Gauge pressure = bar  O,7  O,0 0,43

Notes

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

# **Testoil-ISO 4113**

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 1 49 1. Edition

 $(\pm 0.75^{\circ})$ 

PE 12 A 95 D 610 LS 2453

RQV 300-1150 AB 1056 DL

supersedes

company:

**KHD** 

engine:

BF 12 L 413 272 kW (370 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

 $0-15-60-75-120-135-180-195-240-255-300-315^{\circ} \pm 0,5^{\circ}$ 

# A. Fuel Injection Pump Settings

1- 4- 9- 8- 5 - 2 - 11- 10- 3 - 6 - 7 - 12

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1150	10,3+0,1	9,2-9,4	0,3(0,6)			
300 775 500	6,4-6,6 10,7+0,1 10,2+0,1		0,3(0,5) 0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	speed			Intermediate	rated sp	eed	Lower rated	speed		Sliding sleeve travel	
1 2 2 2	rev/min Control	Control rod travel	<b>1a</b>	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		1
of control lever	rod travel mm	mm rev/min	(2a)	of control lever	rev/min	mm (4)	of control lever	rev/min	mm ③	rev/min	mm
1	2	3	_	4	5	6	7	8	9	10	11
max.	1150	15,2-17,	,8	-	-	-	ca.14	100 300	min.8,0 6,4-6,6	250 550	0,2-0,8 2,8-3,2
ca.66	1 -	1190-120 1240-127								850 1150	4,7-5,0 7,9
	1350	0 - 1,	,0				310-380 3a				

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc	stop	limitation	Fuel deliv	very characteristics 58	idle	_	Torque-control 5		
Test oil ten rev/min	np. 40°C (104°F) (2) cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	switchir rev/min	1	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
LDA 1150	0,7 bar 90,5-92,5 (88,5-94,5)	1190-1200*	LDA	0,7 bar 94,5-98,5 (92,5-100,5)	100	119,0-129,0 14,4- 14,6 mm RW	500 775	10,3+0,1 10,7+0,1 10,7+0,1 10,5+0,2	
			LDA 500	0 bar 76,5			) 330	10,500,2	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

### D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure ~ in bar gauge pressure

KHD 1 b 3

-2-

4113
-180
Testoil

Pump/governor	Setting	Measurement	diminution , Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 12 A LS2453 withAB 1056 DL	0,7	0 0,33 0,28	10,7 - 10,8 10,2 - 10,3 10,6 - 10,7 10,4 - 10,6

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 MB 8,7 m 1. Edition

PES 6 MW 100/720 RS 1101

RQV 300-1300 MW 34

supersedes

0 403 446 124

company: DB

1 - 5 - 3 - 6 - 2 - 4

OM 362 LA

 $0 - 60 - 120 - 180 - 240 - 300 \pm 0,50 (0,75)$ 

141,0 kW (192 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

RW 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torgue-control valve) mm 6
1300	11,9+0,1	9,45-9,65	0,35(0,6)			
300	6,0+0,1	1,05-1,45	0,35(0,55)			
800	11,9+0,1		0,5 (0,7)			
500	10,2+0,1		0,35(0,6)	)		

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated s	peed		T	Intermediate	rated spe	ed	Lower rated	speed	1	Sliding sleeve travel		
	rev/min Control	Control rod (		Dagree of Caffection		Control rod travel	Degree of deflection		Control rod travel	,	①	
of control	rod travel	mm	$\leq$	of control	rev/min	mm (4)	of control lever	r6%/min	mm (3)	rev/min	mm	
1	2	3	$\neg$	4	5	6	7	8	9	10	11	
			$\neg$									
max.	1300	15,2-17	,8				ca.20	300	6,0-6,1			
	1600	0,1-1	,0					100	min.7,6			
ca.61	10,9	1340-13	50					460-	-520 =2,0			
	4,0	1460-14	90				(3a)					

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

	pad delivery rol-rod stop pil temp. 40°C (104°F)  Rotational-speed ( limitation intermediate speed			very characteristics (5a)	Starting Idle switchir	•	Torque- travel	Control Control rod
rev/min	cm³/1000 strokes	røv/min 4a	tea/wiu	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
LDA	o,7 bar		LDA	0,7 bar	100	80,0		
1300	94,5-96,5 (92,5-98,5)	1340-1350*	800	89,5-93,5 (87,5-95,5)				
			LDA 500	0 bar 54,5-56,5 (52,5-58,5)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.82

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### D. Adjustment Test for Manifold Pressure Compensator

-2-

Testatn =

500

rev/min

- in bar gauge pressure

MB 8,7 m

Testoil-ISO 4113

333			
Pump/governor	Setting	Measurement	Control rod travel- difference
	Gauge pressure =	bar Gauge pressure =	bar mm (1) .
RS 1101 with	0,38		11,4 - 11,5
MW 34		0,7	11,9 - 12,0
		0	10,2 - 10,3
		0,3	10,7 - 10,8
	1	1	

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 MAN 11,1 p

9. Edition

estoil-ISO 4113

PES 6 A 95 D 410 LS 2542 RQV 250-1100 AB 850 DL Komb.-Nr. 0 400 846 420

supersedes 10.83

company: MAN

engine: D 2566

D 2566 M /MF 177 kW /2200 min-1

MAN-Nr. 1-7943

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pres	troke	(1.45-1.65)	mm (from BDC)			
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,0+0,1	12,5 - 12,7	0,3(0,6)			
250	5,9-6,1	0,9 - 1,4	0,3(0,5)			
		·			^	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	i 1		Intermediate	rated sp	eed Control rod	Lower rated Degree of	speed	Control rod	Sliding sleeve travel	
deflection of control	rev/min Control rod travel mm	Control rod (a) travel mm (2a)	Degree of deffection of control lever	rev/min	travel 4	deflection of control lever	rev/min	travel 3	rev/min	
1	2	3	4	5	6	7	В	9	10	11
max.	1100	15,2-17,8	-	-	-	ca. 13	100	min. 7,5	200	0,5-1,2
ca. 42	11,0	1140-1150			ļ		ł	5,9-6,1	600	3,8-4,1
	4,0	1180-1210					1	385=2,0mm	1140	8,3
	1300	0 - 1,0					450	max.1,0		
	1	İ		L		(3a)			<u> </u>	i

Torque control travel a = 0 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d	stop	limitation		ery characteristics 58	[Idle	•	Torque-	control 5
Test oil ten	np. 40°C (104°F) (2) cm³/1000 strokes	rev/min		<u> </u>	switchir rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	[7	8	9
1100	124, 5-126, 5 (122, 5-128, 5)			113,0-116,0 (110,5-118,5 107,5-113,5 (105,0-116,0	)	121,5-131,5 (118,5-134,5 = 14,0-14,6 mm RW 6,0 mm RW	)	-

Chucking values in brackets

\* 1 mm less control rod travel than col. 2

7.84

**B.** Governor Settings

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed		Sliding sl	eeve travel
Degree of deflection	rev/min Control	Control rod (		Degree of deflection		Control rod travel	Degree of deflection		Control rod travel	1	(1)
of control lever	rodtravel mm			of control lever	rev/min	mm 4	of control lever	rev/min	mm 3	rev/min	mm
١,	2	3		4	5	6	7	8	9	10	
max.	1260	15,2-17,	,8	-	-	-	ca.12	100	min.7,5	200	0,7-0,9
ca.42	11,0	1140-115 1260-129		,				250	5,9-6,1	500 800	2,8-3,1 5,2-5,5
	1400	0 - 1,	,0				(3a)	320-	380=2,0mm	1100	7,2

Torque control travel a

mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delive Control-rod sto Test oil temp 4	op 40°C (104°F) 2	intermediate speed	nign idle s	ery characteristics (5a) peed (5b)  cm <sup>3</sup> /1000 strokes	switchin		rev/min	Control 5  Control root travel mm
	127,5-129,5 (125,5-131,5		500	min.113,5	100 250 100-	14,0-14,6 mm RW 6,0 170(80-190)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

#### **B. Governor Settings**

Upper rated	Upper rated speed Intermediate rates speed					Lower rated speed			Sliding sl	eeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 3	(la) (2a)	Degree of deflection of control lever	rev/min 5	Control fod travel mm 4	Degree of deflection of control lever	rev/min 8	control rod travel mm 3	rev/min	mm 11
							За				

Torque control travel a =

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

	stop p 40°C (104°F) 2	intermediate speed  (4a)		ery characteristics (5a) peed (5b) cm <sup>3</sup> /1000 strokes		ng point	travel	Control cod travel
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	CIII / 1000 3110KE3		7	8	9
1	2	3	4	5	°	<u> </u>		
			l					
					1			
			1	}				
							Ì	
			}				1	]
						1	1	İ
<b>!</b>	}						1	
					<u> </u>		1	uni than col 1

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

# Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 BUK 1,5c 1. Edition

En

VE 3/10 F 1800 L 70

0 460 403 004

Overflow temperature 45° C

supersedes company: Bukh engine: DV 36 TME

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,2

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	2,9-3,3	mm	0,67	
1.2 Supply-pump pressure	1200	5,1-5,7	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with	600	31,0-33,0	cm³/1000 strokes	0	2,5(3,0)
charge-air pressure Full-load delivery without	1200	46,0-48,0	cm³/1000 strokes	0,67	
charge-air pressure 1.4 Idle regulation	450	5,5-9,5	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm³/1000 strokes	0	
1.6 Start	1850	20,0-26,0	cm³/1000 strokes	0,67	
1.7 Load-dependent port-closing	-				

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	900 1,1-1,9(0,8-2,2)	1200 (2,4-3,8)	1600 5,0-5,8(4,7-6,1)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	200 0,8-1,4		1800 8,0-8,6
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		1800 55-110(40-125)
				0.0:

	C 7.0 3		
2.3 Fuel deliveries			
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm²)
End stop	max.2000 1900 1850 1700 1200 +600	0 2,0-8,0 (1,0-9,0) (19,0-27, 44,5-45,5 (42,7-47, (44,7-49, 35,5-37,5 (33,5-39, (29,0-35,	0,67 (3) 0,67 (3) 0,67 (5) 0,27
switch-off	1800	0	
idle stop  End stop	480-530 450 500 580	0 (3,5-11,5 min.40,0 max.40,0	5) 0
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage	12V

	3. Dimens Designation	ions for assembly and adjustment mm
-	K	
	KF	5,9-6,1
	MS	0,7-0,9
	svs	max.4,2
		İ
	x XK	10,2-22,2
	M XL	12,5-15,8
1		_

#### Observations

LDA-stroke 4,0 mm Use adjusting nut (46) to correct.

**BOSCH** 

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Festoil-ISO 4113

**Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 3,7 c 1. Edition

VE 4/10 F 1500 R 57-1

0 460 404 014

Overflow temperature 45° C

supersedes

MAN

company: engine:

D 0224 ME

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>	
1.1 Timing device travel	1000	5,3-5,7	mm			
1.2 Supply-pump pressure	1000	5,5-6,1	bar (kgf/cm²)			
1.3 Full-load delivery with charge-air pressure	1000	61,5-62,5	cm <sup>3</sup> /1000 strokes		2,5(3,5)	
Full-load delivery without charge-air pressure			cm <sup>3</sup> /1000 strokes			
1.4 Idle regulation	350	10,0-14,0	cm <sup>3</sup> /1000 strokes		2,5(3,5)	
1.5 Full-speed regulation	100	min. 60,0	cm <sup>3</sup> /1000 strokes	ļ ļ	, , , , ,	
1.6 Start	1650	4,0-10,0	cm <sup>3</sup> /1000 strokes			
1.7 Load-dependent port-closing						

2. Test Specifications		checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	600 2,6-3,4(2,3-3,7)	1000 (4,8-6,2)	1400 7,8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 3,6-4,2		1400 7,0-7,6
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-100(40-125)		1500 55-110(40-125)

2.3 Fuel deliveries			and the second s			
Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press.			
End stop	1000	0 (2,5-11,5) max.60,0 68,5-71,5 (67,3-72,7 (59,3-64,7 57,25-60,75 (55,6-62,4	}			
switch-off	1500	0				
End stop	400-450 350 400 470	0 (7,5-16,5)				
2.4 Solenoid	cut-n voltage min.20,0 V rated voltage 24V					

	3. Dimens	ions for assembly
S.	Designation	and adjustment mm
	K KF MS SVS	 5,7-5,9 1,1-1,3
	¥ XK	max.4,6 25,0-27,0 12,2-15,5
	Observations pushing ele 24 V	ctronagnet

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124

6

estoil-ISO 4113

# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 SOF 2,5d

1. Edition

VE 4/9 F 2100 R 87

0 460 494 090

Overflow temperature 45° C

checking values in brackets ( 400

supersedes

Sofim company:

1800

8144.61

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

2100

see VDT-W-460/...

Pre-stroke setting

0,3

2. Test Specifications

2.1 Timing device

1. Settings	Rot speed rev/min			Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1800	7,4-7,8	mm		
1.2 Supply-pump pressure	1800	6,3-6,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge air pressure	2000	37,5-38,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure  1.4 Idle regulation	370	8,0-12,0	cm³/1000 strokes		2,5(3,0)
1,5 Full-speed regulation	100	min.55,0	cm <sup>3</sup> /1000 strokes		
1 6 Start	2350	19,0-25,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	1890				

2.1 ming device	min	1,8-2,8(1,6-2,0)		(6,9-8,3)	,9-8,3) 8,2-9,2(8,0-9,4)		
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,9-3,	5		2100 6,9-7,5		
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)			2100 55-110(40-125)		
23 Fuel deliveries					3. Dimens	tor assembly	
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment	
End stop	2500 2350 2100 2000 1100 600	43,5-46,5	(18,0-26,0) (35,7-40,3) (35,7-40,3) (42,7-47,3) (34,0-40,0)		K KF MS SVS	5,4-5,6 1,7-1,9 max.2,7	
switch-off	2100	0			& XK	25,0-27,0 8,9-12,3	
Idle stop	500 370	max.6,0	(6,0-14,0)		Observations		
End stop	400 480						
2.4 Solenoid	cut-in volta		10,0 V voltage 12V				

Geschaftsbereich KH. Kundendienst. Ktz-Ausrustung. 

1980 by Robert Bosch GmbH. Postfach 50. D. 7000 Stuftgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 MB 3,8 g 2

1. Edition

\_\_\_\_

PES 4 A 90 D 410 RS 2294

RQV 300-1425 AB 740 L

supersedes Daimler-Benz company OM 314 engine 62,5 kW (85 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (2,1 - 2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,7-9,8	6,3-6,4	0,3(0,45)			
300	6,8-7,0	0,9-1,5	0,2(0,4)		·	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	speed		Intermediate	rated sp	eed	Lower rated	speed		Sluding	danus travet
deflection	rev/min Control rod travel mm	Control rod travel mm rev/min 2a	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max. ca;61	1425 8,7 4,0 1650	16,0-19,4 1460-1470 1535-1565 0 - 1,0		-	-	ca.10	100 300 590-6 750		250 640 1030 1425	0,7-1,0 3,2-3,6 5,5-5,7 8,1
						3a)				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

	Rotational-speed (2b) limitation intermediate speed	high idle speed (5b)		Idle	• •	Torque- travel	control (5
cm <sup>3</sup> /1000 strokes	rev/min 48	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strakes	rev/min	travei mm
2	3	4	5	6	7	8	9
62,5-63,5 (60,5-65,5)	1460-1470*	-	-	100	13,7-14,3 mm RW	-	-
				İ	İ		
	cm <sup>3</sup> /1000 strokes 2	d stop	imitation intermediate sceed high idle sceed rev/min 48	d stop   limitation   high idle speed   Sb   cm³/1000 strokes   rev/min   4a   rev/min   cm³/1000 strokes   3   4   5   5	limitation intermediate speed high idle speed switching cm³/1000 strokes rev/min 48 rev/min cm³/1000 strokes rev/min 3 4 5 62,5-63,5 1460-1470* - 100	distop   limitation   high idle speed   fightide speed	imitation intermediate sceed high idle speed so rev/min cm³/1000 strokes rev/min cm³/1000 strokes rev/min so r

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.82

BOSCH

Geschäftsbereich KM. Kundendienst. Kfz-Ausrustung c. by Robert Bosch GmbH, D-7. Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany Imprime en République Fédéralc d'Allemagne par Robert Bosch GmbH. Festoil-ISO 4113

VDT-WPP 001/4 MWM8.8b

1. Edition

PE 8 A 100 D 320 RS 3018

EP/RZU 900A2/17 R

supersedes

MWM company:

PE 8 A 100 D 300 RS 3019

engine

D 232-8

1 - 8 - 5 - 4 - 7 - 2 - 3 - 6 0 -30 -90 -120-180-210-270-300°

Test sequence overleaf!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0+0,1

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,6 - 8,2	0,4			
	6 12	3,2 - 4,2 12,3 -13,4				
200	9	3,4 - 4,6				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 ''	í l	oper rated speed			Intermediate rated speed Lower rated speed					Sliding s	leeve travel
deflection	rev/min Control rod travel	Control rod travel	(1a)	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		
	mm	rev/min	(2B)	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
Full	900 950 1000 1020 1070	14,0 8,2-8,9 2,5-3,7 1,0-1,6	<del>)</del> 7				(3a)				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

	d stop np. 40°C (104°F) 2	top 40°C (104°F) 2 Imitation intermediate speed		very characteristics 5a	ldle switchin	ng point	travel	Control 5  Control rol travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes		cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
880	76,5 - 77,5	925:2,3 mm less than column 2!	900	63,5-68,5				
								• ,

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### Test sequence — EP/RZU — :

- 1. Basic setting of pump Section A of test-specification sheet.
- 2. Basic setting of governor Section B.
- 3. Speed regulation Section C, Column 3.
- 4. Adjustm. of full-load del. Sect.C, Column 1-2. -Establish contr.-rod travel.
- 5. Checking of breakaway Section C, Column 3.
- 6. Check measurement, Section C, Column 4-5.

### **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 DAF 6.2 i 6. Edition

PE 6 A 90 D 320 RS 2547 See Service Information VDT-I-DAF 004

RQ 250/1200 AB 1022 R

supersedes 5.81 DAF company: DT 615

engine: 113 kW (153 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,15-2,35)

mm (from BDC)

RW 9

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	10,8+0,1	1,7-7,2	0,3(0,45)			
250 600	6,9-7,1 9,8-10,0	1,1-1,5 C, col.4-5	0,2(0,4) 0,4(0,55)	l		
Port closin	g differ	ence between co	ntrol-rod	travel 9	mm and max.2,5	° - 3,5° camshaft

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

j .	Hecking of slider Full-load speed regulation Full-load speed regulation RG check Test seems of Full-load speed regulation Full-lo				on Idle speed regulation specifications (4) Setting point   Test specifications (5)					Torque control		
rev/mi	Control rod travel mm		Control rod travel rnm	Control rod travel m.m	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm		Control rod travel mm	
650 VH=		650	20,0	-	1245-1265 1340-1370 0-1,0	250	8,5	100 250 405-	min.10,0 8,4-8,6 465=2,0 max.1,0	-		

Torque-control travel on flyweight assembly dimension a =

Speed regulation At 1245-1265 min-1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	(3a)	Fuel deliv	ery characteristics	<b>3</b> b	Starting f	_
rev/min	cm <sup>3</sup> /-1000 strokes		rev/min		rev/min 4	cm <sup>3</sup> /-1000 strokes		rev/min	Control red travel cm <sup>3</sup> /1000 strokes:/ mm 7
LDA 1000	0,7 bar 71,0-72,0 (69,0-74,0)				LDA 600	0 bar 50,0-52,0 (48,0-54,0)		- 250	- 7,0

Checking values in brackets

2.82

BOSCH

#### D. Adjustment Test for Manifold Pressure Compensator

Test at n =

rev/mig decreasing pressure – in bar gauge pressure

DAF 6,2 i

-2-

Testc..-ISO 4113

			5/11 0 12 1
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
RS 2547 with RQAB 1022 R	0,70	0,27 0,16 0	10,8-10,9 10,6-10,7 9,9-10,1 9,8-10,0

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K6

)

#### **Test Specifications** 2 Fuel Injection Pumps 2 and Governors

WPP 001/4 DAF 8,3 k 5. Edition

PE 6 A 95 D 410 RS 2525, Y, X RQ 225/1200 AB 1007 L supersedes8.80

company: DAF

DN 825 (Y.X)

Test LDA and cold start in accordance with Service Information

**DHR 825** 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
(1,95-2,15)
2,00-2,10

estoil-ISO 4113

mm (from BDC)

RW 9

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,6+0,1	10,8-11,0	0,3(0,6)			.
225	5,7-5,9	0,7- 0,9	0,3(0,5)			
600	11,2+0,1	C, col.4-5	0,4(0,7)			
Port closin	g differ	ence between co	ntrol-rod	travel 9	mm and max. 3	,0 - 4,0° camsha

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Checkin PRG che	g of slider	$\sim$ 1	Full-load s	•	-	cifications (4)	Idle speed regulation Setting point   Test specifications (5)			cifications (5)	Torque control 3		
rev/min	Control rod travel		rev/min 3	Control rod travel mm	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel		Control rod travel mm 12	
650	19,2-20,	8	650	20,0	11,6	1230-1245	225	5,8	100	min.7,2	-	-	
VH=	49°				4,0 1450	1315-1345 0 - 1,0			225 340- 450	5,7-5,9 380=2,0 max.1,0			

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1230-1245 min-1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	telivery on control tever pp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	36)	Starting for	
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5		rev/min 6	Control rod travel cm <sup>3</sup> /1000 strokes:/ mm 7
LDA 1000	0,7 bar 106,5-108,5 (104,5-110,5)		LDA 600	0 bar 77,5-80,5 (75,5-82,5)		100	19,0-21,0
X 1000 Y	90,5-92,5	(12 mm RW	X 600 Y	77,0-80,0			
1000	99,0-101,0	(12,5 mm RW)	600	77,0-80,0			

Checking values in brackets

2.82

# D. Adjustment Test for Manifold Pressure Compensator

Testat n =

rev/min decreasing pressure – in bar gauge pressure

DAF 8,3 k

Pump/governor	Jetting	Measurement  Gauge pressure = bar	Control rod travel- difference mm (1)
PE 6 ARS 2525 withAB 1007 L		0,30 0,25 0	12,6-12,7 12,2-12,3 11,5-11,7 11,2-11,3

Notes:

Testoil-ISO 4113

(1) when n =

rev/min and gauge pressure =

bar (\* maximum full-load control rod travel)

K8

# Test Specifications Fuel Injection Pumps 2 and Governors

WPP 001/4 KHD 1 d 7

1. Edition

PE 6 A 95 D 410 LS 2621

RQ 300/1250 AB 1148 L

supersedes

company:

engine:

KHD F6L413F

1 - 6 - 5 - 4 - 3 - 2

 $0 - 75 - 120 - 195 - 240 - 315^{\circ} \pm 0.5^{\circ} (\pm 0.75)$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

As Fuel Injection Pump Settings 2,0-2,10 Port closing at prestroke (1,95-2,15)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,6-9,7	8,4-8,6	0,3(0,6)			_
300	6,9-7,1	1,6-2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

	Control rod travel	Full-load s Setting po rev/min 3	•	rev/min	Idle spec Setting p rev/min 7	coint Control rod travel		cifications 5 Control rod travel mm 10		Control rod (3) travel mm
550 VH=	19,2-20,8 49°	550	20,0	1295-1310 1325-1355	300	7,0	100 300 345- 450	min.8,5 6,9-7,1 385=2,0 max.1,0	1250 550 910 990	9,6- 9,7 10,1-10,2 9,9-10,1 9,6- 9,9

on flyweight assembly dimension a = 0,25

Speed regulation: A295-1310 min-1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ontrol lever	2	Control rod stop 3a	Fuel delive	ery characteristics	<b>3</b> b	Starting for	d Control
rey/min	np. 40°C (104°F)   cm³/~1000 strokes		rev/min	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min cm³/1000 stro		cm <sup>3</sup> /1000 strokes:// mm 7
1250	82,5-84,5 (80,5-86,5)		600	800	85,0-88,0 (83,0-90,0)		100	119.0-129,0

Checking values in brackets

2.82

**6** 

# Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 REN 2, 0d

1. Edition

En

VE 4/9 F 2200 R 69

0 460 494 055

Overflow temperature 45° C

supersedes

Renault company:

J8S-702 engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1	1400	4,4-4,8	mm	0,74	
1.1 Timing device travel	1400	5,1-5,7	bar (kgf/cm²)	0,74	
1.2 Supply-pump pressure	600	32,5-35,5	cm³/1000 strokes	0	2,5(3,0)
1.3 Full-load delivery with charge-air pressure	1400	49,0-50,0	cm³/1000 strokes	0,74	
Full-load delivery without charge-air pressure	350	9,0-13,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
1.4 Idle regulation	100	min.60,0	cm <sup>3</sup> /1000 strokes	0	
1.5 Full-speed regulation	2400	23,0-29,0	cm <sup>3</sup> /1000 strokes	0,74	
1.6 Start					į
1.7 Load-dependent port-closing				<u> </u>	

2. Test Spec	HICATIONS	checking values in b		4000	200	
.1 Timing device	n = rev/min mm	1000 2,2-3,0(1,9	1400 3,3)(3,9-5,3		7-7,1)6,2-7,0	0(5,9-7,3)
.2 Supply pump	n = rev/min bar (kgf/cm²)	400 1,9-2,	5	1800 6,3-6,		
yerflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-1	25)		22 <sup>1</sup> 55-110(4	
2.3 Fuel deliveries				- Chargo air pross	3. Dimens	ons for assembly and adjustment mm
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Dosignation	<del></del>
End stop switch-off	2650-2750 2500 2400 2200 2000 1400 1000 700 600	43,0-45,0	(22,0-30,0) (40,2-44,8) (41,7-46,3) (47,2-51,8) (43,7-48,3) (36,0-42,0) (31,0-37,0)	0,74 0,74 0,74 0,74 0,74 0,74 0,74 0,2 0	K KF MS SVS XXK Bx XL	3,2-3,4 5,7-5,9 1,4-1,6 max.5,3 20,2-22, 9,1-12,
idle stop	400-480 375 350	0,0-8,0	(2,0-10,0) (7,0-15,0)		Observations	3,1 12,
End stop	180 250					
2.4 Solenoid	cut-in volta	ge min. • rated v	. 10,0 V voltage 12V			-

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40

WPP 001/4 VWW 1,6u 1. Edition

En

VE 4/9 F 2100 R 48

0 460 494 039

Overflow temperature 45° C

supersedos

company: engine: VWW EA 162/1,6

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

mm

248 AD 1-44-4001.

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,5-3,9	mm		
1.2 Supply-pump pressure	1500	4,8-5,4	bar (kgf/cm²)		
1.3 Full-load delivery with	1500	33,0-34,0	cm³/1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 strokes		
charge-air pressure	415	3,0-7,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.40,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2300	12,0-18,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spec	ifications :	checking values in t	orackets ( )			
2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1		1500 (3,0-4,4)	2100 5,5-6,3(5,	2-6,6)
2.2 Supply pump	n = rev/min bar (%gf/cm²)	400 2,1-2,7		•	2100 6,3-6,	9
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-1	125)		2100 55-110(40-	
2.3 Fuel deliveries				Characair prass	3. Dimens	ions for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	
End stop switch-off	2450-2550 2400 2300- 2100 1500 600		(11,0-19,0) (26,9-31,5) (31,2-35,8) (19,0-25,0)		K KF MS SVS +FH  X XK	3,2-3,4 5,7-5,9 1,3-1,5 max.4,8 1,8-2,4 18,6-20,6 7,5-10,8
idle stop  End stop	2000 450 415 400 470	max.3,0 min.2,0	(2,0-8,0)			ing stroke start accel.
2.4 Solenoid	cut-in volta	-9-	n. 10,0 V d voltage 12V			

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fedérale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 VWW 1,6t

1. Edition

En

VE 4/9 F 2100 R 48-2 (P)

1.7 Load-dependent port-closing

0 460 494 102; 103

supersedes -

company: VWW

Typ 2 USA engine:

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

2. Test Specifications checking values in brackets (

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,5-3,9	mm		
1.2 Supply-pump pressure	1500	4,8-5,4	bar (kgf/cm²)		
1.3 Full-load delivery with	1500	33,0-34,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 stroķes		
charge-air pressure 1.4 Idle regulation	415	3,0-7,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.40,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2300	10,0-18,0	cm <sup>3</sup> /1000 strokes		

T. 169r Obce	711106310110	0					
2.1 Timing device	n = rev/min	1000		1500	-	100	0.5.5
	mm	1,4-2,2(1,1	-2,5) (	3,0-4,4)	5,5-6,		2-6,6)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,1-2,	7			100 3-6,	9
		500			2	100	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	55-110(40-1	25)				1-125)
2.3 Fuel deliveries	1				3. Din	nens	for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designatio	n	and adjustment mm
End stop	2450-2550 2400	0 max. 6,0			K		3,2-3,4
	2300	max. 0,0	(11,0-19,0) (26,9-31,5)		KF		5,7-5,9
	2100	28,2-30,2	(26,9-31,5)		MS		1,3-1,5
	1500 600	20,5-23,5	(31,2-35,8) (19,0-25,0)		svs		max.4,8
					+FI	H	1,8-2,4
switch-off				1	*	XK	18,6-20,6
SWILCH-OIL	2100	0			Ŗ.	XL	7,5-10,8
idle stop	2000	max.3,0			Observati	ons	
	450 415	min.2,0	(2,0-8,0)		+ op	erat old-	ing stroke start accel.
End stop	400 470	, , , ,					
2.4 Solenoid	cut-in volta		. 10,0 V voltage 12V			<u></u>	

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Federale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 IHC 6,6f

1. Edition

En

VE 6/12 F 1250 R 38-2 (P)

Overflow temperature 45° C

0 460 426 023; 024 Setting of the pointer at a stroke of 1 mm in

relation to outlet "A".

Nozzle-and-holder assembly 1 688 901 020
All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

supersedes

IHC company:

DT 402/3994 engine:

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
	1000	3,5-4,1	mm		
1.1 Timing device travel	1000	4,9-5,5	bar (kgf/cm²)		
1.2 Supply-pump pressure	1000	117,5-118,5	cm <sup>3</sup> /1000 strokes		2,5(4,5)
1.3 Full-load delivery with charge-air pressure			cm³/1000 strokes		
Full-load delivery without charge-air pressure	500	15,0-21,0	cm³/1000 strokes		2,5(4,5)
1.4 Idle regulation	100	min.90,0	cm³/1000 strokes		
1.5 Full-speed regulation	1300	71,0-79,0	cm <sup>3</sup> /1000 strokes		
1.6 Start					
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	600 1,3-2,1(1,0-2,4)	1000 (3,1-4,5)	1230 4,5-5,3(4,2-5,6)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 3,2-3,8		1230 5,5-6,1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		1250 55-110(40-125)
			W	3 Dimensions

2.3 Fuel deliveries				
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1380-1430 1300 1230 1000 700 500	102,5-106,5	(70,0-80,0) (109,5-115,5) (115,0-121,0) (101,5-107,5) (90,2-97,8)	4
switch-off	1250	0		
idle stop	520-570 500	0	(13,0-23,0)	
End stop	260 380			
2.4 Solenoid	cut-in volta	ge		

3. Dimens	tor assembly and adjustment mm
K KF MS SVS	3,2-3,4 5,4-5,6 0,6-0,8 max.6,0
XXK RXL Observations	20,2-22,1

**BOSCH** 

Geschaftsbereich KH Kundendienst Kf2-Ausrustung 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1 Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

WPP 001/4 IHC 6,6e

1. Edition

E

VE 6/12 F 1250 R 38-1 (P)

0 460 426 018; 019 Overflow \*emperature 45° C Setting of the pointer at a stroke of 1 mm in

supersedes I HC

company: DT 358/520 B

relation to outlet "A". Nozzle-and-holder assembly 1 688 901 020

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,4

mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,8-4,2	mm		
1.2 Supply-pump pressure	1000	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	94,5-95,5	crn³/1000 strokes		2,5(4,5)
Full-load delivery without			cm³/1000 strokes		
charge-air pressure 1.4 Idle regulation	350	15,0-21,0	cm <sup>3</sup> /1000 strokes		2,5(4,5)
1.5 Full-speed regulation	100	min.100,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	1300	47,0-53,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	600 1,2-2,0(0,9-2,3)	1000 (3,7-4,7)	1250 4,5-5,2
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,7-3,3		1250 5,5-6,1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		1250 55-110(40-125)
23 Fuel deliveries			A	3. Dimensions

2 3 Fuel deliveries		TO THE PERSON NAMED OF THE			3. Dimer	tor assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	1350-1430 1300 1220 1000 700 500	87,0-91,0	(45,0-55,0) (86,0-92,0) (92,0-98,0) (86,0-92,0) (74,2-81,8)		K KF MS SVS	5,4-5,6 0,8-1,0 max.6,8
switch-off	1250	0			A B	
End stop	400-480 350 260 380	0	(13,0-23,0)		Observations	
2.4 Solenoid	cut-in voltag	e e				

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WPP 001/4 IHC 5,8s

1. Edition

supersedes

company:

engine:

En

VE 6/11 F 1250 R 56 (P)

Overflow temperature 45° C 0 460 416 010 011 Setting of the pointer at a stroke of 1 mm in

relation to outlet "A".

Pre-stroke setting

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers
Nozzle-and-holder assembly

mm1 688 901 020

**Test Instructions and Test Equipment** 

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,0-5,4	mm		
1.2 Supply-pump pressure	800	4,0-4,6	bar (kgf/cm²)		
1.3 Full-load delivery with	900	82,0-83,0	cm <sup>3</sup> /1000 strokes		2,5(4,0)
charge-air pressure Full-load delivery without			cm <sup>3</sup> /1000 strokes	,	
charge-air pressure 1.4 Idle regulation	450	20,0-22,0	cm <sup>3</sup> /1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 85,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	1330	31,0-37,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	400	800 3,3-3,9(2,9-4,	1000 3) (4,5-5,9)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,2-2,8		1250 5,7-6,3
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		1250 55-110(40-125)
2.3 Fuel deliveries		I Fred delivers	Charge-air press	3. Dimensions for assembly and adjustment

	<del></del>	L			
2.3 Fuel deliveries				1	
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)	
End stop	1390-1440 1330 1300 1230 900 700 500		(29,5-38,5) (41,5-50,5) (80,8-86,2) (79,8-85,2) (73,3-78,7) (62,6-69,4)		
switch-off	1250	0			
idle stop	500-550 450	0	(17,5-26,5)		
End stop	280 360				
2.4 Salenoid	cut-in voltage	111 1 11 •	10,0 V voltage 12V		

Designation	and adjustment
к	3,2-3,4
KF	5,7-5,9
MS	0,9-1,1
svs	1,2-6,0
% XK % XL	20,7-22,7 8,4-11,7
Observations	

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# WPP 001/4 IBE 4,0a

Test Specifications Distributor-type Fuel-injection Pumps

1. Edition

VE 4/12 F 1300 R 103

0 460 424 004

Overflow temperature 45° C

Nozzle-and-holder assembly 1 688 901 020

supersedes Iberica company: T 4.236 engine:

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

Festoil-ISO 4113

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,2-4,6	mm	0,75	
1.2 Supply-pump pressure	1000	5,5-6,1	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with	500	63,5-67,5	cm <sup>3</sup> /1000 strokes	0	2,5(4,5)
charge-air pressure Full-load delivery without	1000	95,5-96,5	cm³/1000 stroķes	0,75	
charge-air pressure 1.4 Idle regulation	300	6,0-12,0	cm <sup>3</sup> /1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min. 70,0	cm <sup>3</sup> /1000 strokes	0,75	."
1.6 Start	1400	65,0-71,0	cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing					
	1			1	

2.1 Timing device	n = rev/min	500		1000	1300	
	mm		0,7-1,5(0,4-1,8)		5,8-6,6(5,	5-6,9)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 3,3-3,	9		1300 6,7-7,3	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-	125)		1300 55-110(40-1	25)
2.3 Fuel deliveries					3. Dimens	for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	1580-1640 1400 1300 - 1000 700 500	0 86,0-89,0 80,5-84,5	(63,0-73,0) (84,5-90,5) (93,0-99,0) (79,5-85,5) (61,75-69,25)	0,75	K KF MS SVS	5,1-5,3 1,1-1,3 5,0
switch-off	1300	0			X XK	20,2-22,2
idle stop	370-430 300	0	(4,0-14,0)		Observations	
End stop	160 210					
2.4 Solenoid	cut in voltage		10,0V oltage 12V			

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2. Test Specifications checking values in brackets (

WPP 001/4 IHC 6,6a

1. Edition

VE 6/12 F 1100 R 47

Overflow temperature 45° C

supersedes<sup>-</sup> company: IHC

0 460 426 009

Setting of the pointer at a stroke of 1 mm in

engine: DT 402/A 65

relation to outlet "A".

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers Nozzle-and-holder assembly

Test Instructions and Test Equipment

Pre-stroke setting

mm 1 688 901 020

see VDT-W-460/...

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,2-4,6	mm bar (kgf/cm²)		
1.2 Supply-pump pressure	800	5,7-6,3	cm <sup>3</sup> /1000 strokes		2,5(4,5
1.3 Full-load delivery with charge-air pressure Full-load delivery without	800	101,5-102,5	cm³/1000 stroķes		2,5(4,5
charge-air pressure  1.4 Idle regulation	375	20,0- 26,0	cm <sup>3</sup> /1000 strokes		2,5(4,5
1.5 Full-speed regulation	100	min. 100,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	1200	32,0-40,0	CIII-7 1000 Strones		
1.7 Load-dependent port-closing				<u> </u>	<u></u>

2.1 Timing device	n = rev/min mm	400 1,1-1,9(0,	8-2.2) (3	800 3,7-5,1)	1000 5,1-5,9(4,	8-6,2)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 3,7-4,			1000 6,5-7,1	
Overflow delivery	n = rev/min cm³/10 s	500 55-110(40-			1100 55-110(40	)-125)
2.3 Fuel deliveries					3. Dimens	tor assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)	Designation	mm
End stop	1240-1290 1200 1100 800 500		(31,0-41,0) (94,5-100,5) (99,0-105,0) (85,2-92,8)	)	K KF MS SVS	5,4-5,6 1,0-1,2 max.6,0
switch-off	1100	0			% XK ⅓ XL	10,2-22,2
Idle stop  End stop	450-500 375 420 480	0	(18,0-28,0)		Observations	
2.4 Solenoid	cut-in voltage	e				

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. c. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fedérale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 PER 5,8b3 1. Edition

VE 6/12 F 1300 L 73

Overflow temperature 45° C

supersedes =

0 460 426 020

company: Perkins

Nozzle-and-holder assembly

T 6.354.4

1 688 901 020

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

1.6 Start

1.7 Load-dependent port-closing

estoil-ISO 4113

0,3

Charge-air press. bar (kgf/cm²) Settings Difference in Rot. speed 1. Settings delivery cm<sup>3</sup> 600 2,9-3,5 0,75 1.1 Timing device travel 600 3,4-4,0 0,75 bar (kgf/cm²) 1.2 Supply-pump pressure 90,5-94,5 cm<sup>3</sup>/1000 strokes 1000 0 2,5(4,5)1.3 Full-load delivery with charge air pressure 1000 97,5-99,5 cm<sup>3</sup>/1000 strokes 0,75 Full-load delivery without charge-air pressure 300 26,0-34,0 cm<sup>3</sup>/1000 strokes 0 2,5(4,5)1.4 Idle regulation 100 min. 100,0 cm<sup>3</sup>/1000 strokes 0 1.5 Full-speed regulation 1550 2,0-10,0 cm<sup>3</sup>/1000 strokes 0,75

2.1 Timing device	n = rev/min	400		600	80	
	mm	0,7-1,5(0,	4-1,8)	(2,5-3,9)	3,9-4,7(	3,6-5,0)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,4-3,0				
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-	125)		130 55-110(40	
2.3 Fuel deliveries			.*		3. Dimens	for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	1550 1480 1300 1000 1000 +700 500	89,5-93,5 90,5-95,5 82,5-87,5	(1,0-11,0) (41,0-51,0) (88,5-94,5) (89,5-95,5) (95,5-101,5 (90,0-96,5) (81,25-83,75)	0,75 0 0,75	K KF MS SVS	5,1-5,3 1,1-1,3 max.6,0
SWITCH-OH	1300	0			₹ XL	10,6-13,9
Idle stop	360-420 300	0	(25,0-35,0)			oke 3,5 mm.
End stop	190 360 420	max.85,0				justing nut correct.
2.4 Solenoid	cut-in volta		10,0 V   voltage 12\			

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Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung.

1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

Festoil-ISO 4113

**Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 5,8 t

1. Edition

VE 6/12 F 1350 R64

Overflow temperature 45° C

supersedes 7

0 460 426 016

company: IHC

Setting of the pointer at a stroke of 1 mm in

D 358/PC 11 engine:

relation to outlet "A".

All test specifications are valid only for Bosch-Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

Nozzle-and-holder assembly 1 688 901 020

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,0-5,4	mm		
1.2 Supply-pump pressure	1100	5,4-6,0	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1150	83,0-84,0	cm <sup>3</sup> /1000 strokes		2,5(4,5)
Full-load delivery without charge-air pressure			cm <sup>3</sup> /1000 stroķes		
1 4 Idle regulation	500	14,5-20,5	cm <sup>3</sup> /1000 strokes		2,5(4,5)
1.5 Full-speed regulation	100	min.100,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	1450	9,0-17,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	ecifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	600 1,6-2,4(1,3-2,7	1100 (4,5-5,9	1250 5,5-6,3(5,2-6,6)
2.2 Supply pump	n = rev/min bar (kg²/cm²)	400 2,7-3,3		1350 6,3-6,9
Overflow delivery	n = rev/min cm³/10 s	500 55-110(40-125)		1350 55-110(40-125)
2.3 Fuel deliveries				3. Dimensions

	1		,				(10 120)
2.3 Fuel deliveries					3. Din	nens	Sions tor assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designatio	n 	mm
End stop	1460-1510	0			к		3,2-3,4
	1450 1400	9,0-17,0	(8,0-18,0)		KF		5,7-5,9
	1300	79,5-82,5	(42,0-52,0) (78,0-84,0)		MS		1,0-1,2
	1150 800 500	75,0-79,0	(80,5-86,5) (74,0-80,0) (63,25-70,75)		SVS		max.6,0
switch-off	1350	0	erina ara-gara dan gara (min Para dan 1914) ang Papana Bandaria (min		<b>⅍</b>	XK XL	20,2-22,2
Idle stop	520-570 500	0	(12,5-22,5)		Observation	ons	· <del>                                     </del>
End stop	250 350						
2.4 Solenoid	cut-in voltag		.10,0V voltage 12V				

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Federale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 PER 5,8b2

1. Edition

VE 4/11 F 1400 R 39 ( Overflow temperature 45° C

supersedes-

0 460 414 001 002 company: Perkins

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

engine: 4.236 V

All test specifications are valid only for Bosch-Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

Nozzle-and-holder assembly

see VDT-W-460/...

Festoil-ISO 4113

rie-snoke setting	1	<u>688 901 020</u>		300 101 11 4001	
1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,0-2,6	mm		
1.2 Supply-pump pressure	800	4,8-5,4	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	800	66,5-67,5	cm <sup>3</sup> /1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure			cm <sup>3</sup> /1000 strokes		
1.4 Idle regulation	400	13,0-17,0	cm <sup>3</sup> /1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 75,0	cm³/1000 strokes		
1.6 Start	1500	43,0-49,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	Unications	checking values in br	ackets (	)				
2.1 Timing device	n = rev/min mm	500 0,7-1,5(0,4	l-1 <b>,</b> 8)	(1,	800 ,6-3,0)	1400 3,9-4,5(3,5-4,9)		
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 3,7-4,3	500 3,7-4,3		1400 6,7-7,3			
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-1	25)				•	10-125)
2.3 Fuel deliveries		ł				3. Din	nens	Sions for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes			Charge-air press. bar (kgf/cm²)	Designatio		and adjustment
End stop	1580 1500 1400 800 500	max. 17,0 65,0-68,0 52,0-55,0	(41,5-5 (63,8-6 (64,3-6 (50,1-5	9,2 9,7		K KF MS SVS		3,2-3,4 5,1-5,3 1,2-1,4 max.4,5
switch-off	1400	0				* \$	XK XL	
End stop	450 400 	5,0-9,0	(10,5-1	9,5)	-71	Observatio	ins	
2.4 Solenoid	cut-in voltage							.:

K20

WPP 001/4 PER 5,8b 4 1. Edition

VE 6/12 F 1300 L 73-1

Overflow temperature 45° C

0 460 426 021 Nozzle-and-holder assembly

1 688 901 020

supersedes

company:Perkins

engine: T 6.354.4

All test specifications are valid only for Bosch-Fuel-injection Fump Test Benches and Testers mm

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

0.3

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	600	2,9-3,5	mm	0,75	
1.2 Supply-pump pressure	600	3,4-4,0	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with	1000	90,5-94,5	cm³/1000 strokes	0	2,5(4,5)
charge-air pressure Full-load delivery without	1000	97,5-99,5	cm³/1000 strokes	0,75	
charge-air pressure 1.4 Idle regulation	300	26,0-34,0	cm <sup>3</sup> /1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min.100,0	cm <sup>3</sup> /1000 strokes	0	
1 6 Start	1550	2,0-10,0	cm <sup>3</sup> /1000 strokes	0,75	
1.7 Load-dependent port-closing	_	-			

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	400 0,7-1,5(0,4-1,8)	600 (2,5-3,9)	800 3,9-4,7(3,6-5,0)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,4-3,0		
Overflow delivery	n = rev/min cm³/10 s	500 55-110(40-125)		1300 55-110(40-125)
2.3 Fuel deliveries	. <u>-</u>			3. Dimensions tor assembly and adjustment

	· · · · · · · · · · · · · · · · · · ·	22-110(40-1	<u> </u>		
2.3 Fuel deliveries					
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	
End stop	1550 1480 1300 1000 1000 +700 500	89,5-93,5	(1,0 -11,0) (41,0-51,0) (88,5-94,5) (89,5-95,5) (95,5-101,5) (90,0-96,0) (81,25-83,75)	0,75 0,75 0,75 0 0,75 0.32 0	
switch-off	1300	0			
idle stop	360-420 300 360 420	0	(25,0-35,0)		And the second s
2.4 Solenoid	cut-in voltage	<u></u>			

3. Dimen	for assembly
Designation	and adjustment mm
к	-
KF	5,1-5,3
MS	1,1-1,3
svs	max.6,0
* XK	20,2-22,2
B XL	10,6-13,9

without electrical shutoff device + LDA-stroke 3,5 mm. Use adjusting nut (46) to correct.

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung.
1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 IHC 6,6i

1. Edition

VE 6/12 F 1100 R 102

Overflow temperature 45° C

supersedes IHC company: DT 402

engine:

0 460 426 025 Nozzle-and-holder assembly

1 688 901 020

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

0,2 Pre-stroke setting

1. Settings	Ret. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	600	3,4-3,8	mm	0,75	
1.2 Supply-pump pressure	600	5,0-5,6	bar (kgf/cm²)	0,75	0.5/4.5
1.3 Full-load delivery with	600	80,5-83,5	cm <sup>3</sup> /1000 strokes	0	2,5(4,5)
charge-air pressure Full-load delivery without	800	99,0-100,0	cm³/1000 stroķes	0,75	
charge-air pressure 1.4 Idle regulation	375	20,0-26,0	cm <sup>3</sup> /1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min. 90,0	cm <sup>3</sup> /1000 strokes	0	
1.6 Start	1200	33,0-39,0	cm <sup>3</sup> /1000 strokes	0,75	
1.7 Load-dependent port-closing	-	_			

2.1 Timing device	n = rev/min	400		600	700		
	mm	1,2-2,0(0,9	9-2,3) (	(2,9-4,3)	3,6-4,2(3,2-4,6)		
2.2 Supply pump	n = rev/min	400			1100		
	bar (kgf/cm²)	3,9-4	,5		7,0-7,	6	
Overflow delivery	n = rev/min	500			1100		
	cm <sup>3</sup> /10 s	55-110(40-1	125)	55	-110(40-125)		
2.3 Fuel deliveries		<u> </u>			3. Dimens	tor assembly	
Speed control lever	Rot. speed	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm	
End stop	1220-1280 1200 1080 800 600 600		(31,0-41,0) (95,5-101,5) (96,5-102,5) (85,75-93,25) (78,25-85,75)	0,75	K KF MS SVS	- 5,6-5,8 1,5-1,7 max.6,0	
switch-off	1100	0			X XK	20,2-22,2	
idle stop	420-500 375	0	(18,0-28,0)		Observations		
End stop	400 460						
2.4 Solenoid	cut-in voltage		10,0 V voltage 12V				

WPP 001/4 IHC 5,8s 1 1. Edition

VE 6/12 F 1100 R 52

Overflow temperature 45° C

supersedes IHC

0 460 426 011

company:

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

D 358/A 54 engine:

All test specifications are valid only for Bosch Fuel injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

Nozzle-and-holder assembly 1 688 901 020

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air prass. bar (kgf/cm²)	Difference in delivery cm <sup>9</sup>
1.1 Timing device travel	700	4,5-4,9	mm	0,67	
1.2 Supply-pump pressure	700	5,7-6,3	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with	500	73,0-77,0	cm³/1000 strokes	0	2,5(4,5)
charge-air pressure .Full-load delivery without	800	94,0-95,0	cm <sup>3</sup> /1000 strokes	0,67	
charge-air pressure  1.4 Idle regulation	380	16,0-20,0	cm³/1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min.100,0	cm <sup>3</sup> /1000 strokes	0	
1.6 Start	1200	16,0-24,0	cm <sup>3</sup> /1000 strokes	0,67	
1.7 Load-dependent port-closing					

	<b>cifications</b>	1		700		
2.1 Timing device	n = rev/min	1 7 2 5/1	,4-2,8)	700 (4,0-5,4)	90 5 9 6 6 0	
	mm	<del></del>	,4-2,0)	(4,0-5,4)		5,5-6,9)
2.2 Supply pump	n = rev/min	400	4		110	
	bar (kgf/cm²)	4,5-5	, l	المنافقية القام المنافقية المنافقية المنافقية المنافقية المنافقية المنافقية المنافقية المنافقية المنافقية المن	6,9-7,	3
Overflow delivery	n = rev/min	500			110	
	cm <sup>3</sup> /10 s	55-110(40-	-125)		55-110(4	0-125)
2.3 Fuel deliveries			gamman den dispersion relation to the desire company of the desire of the desired		3. Dimen	for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	The second second second second second second second second second second second second second second second se	Charge-air press bar (kgf/cm²)	Designation	and adjustment
End stop	1220-1270	0	_	0,67		
	1200	F7 0 60 0	(15,0-25,0)	0,67	K	
	1170 1080	5/,0-63,0	(55,0-65,0) (85,0-91,0)	0,67	KF	5,4-5,6
	800	00,0-03,2	(91,5-97,5)	0,67	MS	1,3-1,5
	+500	83,0-86,0	(81,5-87,5)	0,3	svs	max.6,0
	500		(71,2-78,8)	0	1	
switch-off					*	20,2-22,2
SWILCH-DII	1100	0			ax.	10,2-13,5
Idle stop	440-490	0			Observations	
	380		(13,0-23,0)		+ LDA-st	oke 4,5 mm
Em. J A	200				Use adj	justing nut correct.
End stop	380 450	min.75,0 max.75,0			(40) (	correct.
	750	max./5,0				
2.4 Solenoid	cut-in voltage					

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Geschaftsbereich KH. Kundendienst, Kfz-Ausrustung ~ 1980 by Robert Bosch GmbH. Postfach 50. D. 7000 Stuttgart 1. Printed in the Federal Republic of Germany Impridie en Republique Federale d'Alternagne par Robert Bosch GmbH.

WPP 001/4 Vol 3,6d

1. Edition

VE 6/11 F 1500 L 19-3

Overflow temperature 45° C

Volvo company: MD 40 A (C)

0 460 416 005

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

 $mm \pm 0.02 (0.04) mm$ 

see VDT-W-460/...

estoil-iSO 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,0-4,4	mm		
1 2 Supply-pump pressure	1500	6,0-6,5	bar (kgf/cm²)		
1.3 Full-load delivery with	1000	43,0-44,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 strokes		
charge-air pressure  1.4 Idle regulation	350	9,0-13,0	cm³/1000 strokes	ļ	2,5(3,0)
1.5 Full-speed regulation	100	min.70,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	1650	27,0-33,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in b	rackets ( )				
2.1 Timing device	n = rev/min mm	1000 1,4-2,4(1,2			1500 (3,5-4,9)		
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 2,5-3	500 1500 5-3,0 6,0-6,5				
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-111(40-126) 55-			1500 -111(40-126)		
2.3 Fuel deliveries		J			3. Dimer	ISIONS for assembly and adjustment	
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)	Designation	mm	
End stop	1800-1900 1750	0 max.14,0			к		
	1650	40.0.45.0	(26,0-34,0)		KF	5,9-6,1	
	1500	42,0-45,0	(41,2-45,8)		MS	1,7-1,9	

Speed control lever	Rot. speed rev/min	cm <sup>3</sup> /1000 strokes		bar (kgf/cm²)	Designation	11111
End stop	1800-1900 1750 1650 1500 1000 600		(26,0-34,0) (41,2-45,8) (41,2-45,8) (29,0-35,0)		K KF MS SVS	5,9-6,1 1,7-1,9 max.2,6
switch-off	1500	0			A B	
Idle stop  End stop	420-480 350 100 220	0 min.65 max.60	(7,0-15,0)		Observations	
2.4 Solenoid	cut-in voltage	min. rated	10 V voltage 12V			

WPP 001/4 Vol 3,6b

1. Edition

VE 5/11 F 1500 L 19-1

Overflow temperature 45° C

supersedes Volvo company: TMD 40 A

0 460 416 003 Setting of the pointer at a stroke of 1 mm in

relation to outlet "A".

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

engine

1500

1500

(3,5-4,9)

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

2.1 Timing device

0,2

2. Test Specifications checking values in brackets (

cut-in voltage

n = rev/min

mm

± 0,02 (0,04) mm

1000

1,6-2,6(1,4-2,8)

500

	_
13	
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leg	

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,0-4,4	mm		
1.2 Supply-pump pressure	1500	6,0-6,5	bar (kgf/cm²)		
1.3 Full-load delivery with	1000	54,5-55,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm <sup>3</sup> /1000 strokes		
charge-air pressure 1 4 Idle regulation	350	9,0-13,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.80,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	1600	32,0-38,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2 2 Supply pump	n = rev/min bar (kgf/cm²)	500 2,5-3			500 0-6,5	والمناد والمنادة المنادة واستعداد المنادة والمناد والمنادة والمناد	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-111(40-126)			1500 55-111(40-126)		
2.3 Fuel deliveries Speed control lever	Rot speed	Fuel delivery cm3/1000 strokes		Charge-air press. bar (kgf/cm²)	3. Dimen	sions for assembly and adjustment mm	
Ena stop	1780-1880 1700 1600 1450 1000 600	0 max. 18,0 54,0-57,0 42,0-45,0	(31,0-39,0) (53,2-57,8) (52,7-57,3) (40,5-46,5)		K KF MS SVS	5,9-6,1 1,7-1,9 max.2,6	
switch-off	1500	0	Communication of the Control of the		∜x XK %x XL	9,0-14,0 8,1-11,3	
idle stop	420-480 350	0	(7,0-15,0)		Observations		

2 4 Solenoid

min. 10 V

rated voltage 12 V

Testoil-ISO 4113

Test Specifications Distributor-type Fuel-injection Pumps 44

WPP 001/4 Vol 3,6h

1. Edition

1500

En

VE 6/11 F 1800 L 18-2 0 460 416 015

Overflow temperature 45° C

superseries company:

engine:

Volvo TD 40 A

1800

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

 $0,3 \quad mm \pm 0,02 \quad (0,04)$ 

2. Test Specifications checking values in brackets (

cut-in voltage

1100

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,7-3,1	mm	0,73	
1.2 Supply-pump pressure	1500	6,7-7,3	bar (kgf/cm²)	0,73	0.5(0.0)
1.3 Full-load delivery with	500	45,0-48,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
charge-air pressure .Full-load delivery without	1500	62,5-63,5	cm³/1000 strokes	0,73	
charge-air pressure 1.4 Idle regulation	325	7,0-13,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	max. 60,0	cm³/1000 strokes	0	
1.6 Start	2000	18,0-24,0	cm <sup>3</sup> /1000 strokes	0,73	
1 7 Load-dependent port-closing					

2.1 Timing device	n = rev/min	0 7 1 5/0	4 4 0) (0	1200	2 7 1 5 2	11 0)
	mm	0,7-1,5(0,	4-1,8) (2	2,2-3,6)	3,7-4,5(3	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,4-3,	0		1800 7,7-8,	
Overliow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-111(40-	126)		1800 55-111(40-	
2.3 Fuel deliveries		1			3. Dimen	sions for assembly
Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)	Designation	and adjustment mm
End stop	2100-2180 2070 2000 1800 1500 * 500 500		(17,0-25,0) (55,7-60,3) (60,7-65,3) (48,5-54,5) (43,5-49,5)		K KF MS SVS	 5,9-6,1 1,2-1,4 max.4,5
'switch-off	1800	0			& XK	20,1-22,1
idle stop	430-500 325	0	(6,0-14,0)		Use adj	oke 4,0 mm usting nut correct.
		I	La caracter and a contract of		1	

BOSC

2.4 Solenoid

min. 10 V

rated voltage 12V

Fuel-injection Pumps

WPP 001/4 VWW 1,5e

1. Edition

VE 4/9 F 1500 R 25-2 R 25-2 P

Overflow temperature 45° C

supersedes company: engine

0 460 494 017 0 460 494 018

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,5-3,9	mm		
	1500	5,1-5,7	bar (kgf/cm²)		
1.2 Supply-pump pressure 1.3 Full-load delivery with	1000	26,5-27,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure  Full-load delivery without			cm³/1000 strokes		
charge-air pressure	415	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.38,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	1560	19,0-23,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in brackets (	)		<u> </u>
2.1 Timing device	n = rev/min mm	1000 1,3-2,1(1,0-2,4)	1500 (3,0-4,4	)	
2.2 Supply pump	n = rev/min: bar (kgf/cm²)	400 2,4-3,0			
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-111(40-126			500 1(40-126)
2.3 Fuel deliveries	Rot speed	Fuel delivery	Charge-air press.	3. Dimens	for assembly and adjustment mm

2.3 Fuel deliveries		J.,			3. Dimens	tor assembly and adjustment
Speed control lever	Rot.speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	and the second s	Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	1595-1640 1560 1500 1000 600		(17,0-25,0) (26,7-31,3) (24,7-29,3) (20,0-26,0)		K KF MS SVS * FH	3,2-3,4 5,7-5,9 1,2-1,4 max.3,6 1,8-2,4
switch-off electr.	400	bei 2,5 V	0		A B	9,0-14,0 10,4-15,6
Idle stop  End stop	700 415 400 500	max. 2,0 min.15,0 max.21,0	(4,0-12,0)			ing stroke start accel.
2.4 Salenaid	פיניבע חודועס	• 10 rated volt	V age 12 V			

BOSCH

46

WPP 001/4 VWW 1,5 bl

1. Edition

En

VE 4/9 F 2500 R 16-3 R 16-3 P

Overflow temperature 45° C

supersedes

company: engine: VW EA 086/10

0 460 494 028 0 460 494 029

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/

Pre-stroke setting

Testoil-ISO 4113

mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,6-4,0	mm		
1.2 Supply-pump pressure	1500	4,0-4,6	bar (kgf/cm²)		
1.3 Full-load delivery with	1500	29,9-30,9	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without		<b>′</b>	cm <sup>3</sup> /1000 strokes		
charge-air pressure 1.4 Idle regulation	475	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.39,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2670	13,5-19,5	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spec	cifications	checking values in bra	nckets ( )				
2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-	2,5)	1500 (3,1-4,5)	22 6,3-7,1	00 (6,0-7,3)	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 1,4-2,0		2200 5,9-6,5			
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-111(40-12	26)	2500 55-111(40-126)			
2.3 Fuel deliveries Speed control lever	Rot. speed	Fuel delivery		Charge-air press.	3. Dimen	sions for assembly and adjustment mm	
switch-off electr.	2820 2670 2500 1500 600		(12,5-20,5) (24,4-29,0) (28,1-32,7) (16,4-22,4)	bar (kgf/cm²)	K KF MS SVS * FH **	3,2-3,4 5,7-5,9 1,3-1,5 max.3,6 1,8-2,4 9,0-14,0 9,4-12,6	
Idle stop  End stop	1200 650 475 400 500	max. 3,0 max. 4,0 min. 18,0 max. 20,0	(4,0-12,0)		Observations  * Operating stroke (cold-start accel.)  ** Two piece control le XK = 18,6-20,6 mm XL = 9,1-12,8 mm		
2.4 Salenoid	cut-in voltag	nt-in voltage min. 10 V rated voltage 12V					

BOSCH

46

WPP 001/4 VWW 1,5f

1. Edition

VE 4/9 F 1500 R 25-3

R 25-3 P

Overflow temperature 45° C

supersedes

company: engine: VWW EA 086

0 460 494 035 0 460 494 036

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
, 1.1 Timing device travel	1500	3,5-3,9	mm		
1.2 Supply-pump pressure	1500	5,4-6,0	bar (kgf/cm²)		
1.3 Full-load delivery with	1500	28,5-29,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 stroķes		
charge-air pressure 1.4 Idle regulation	415	6,0-10,0	cm <sup>3</sup> /1000 strokes	}	2,5(3,0)
1.5 Full-speed regulation	100	min.38,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	1550	20,0-24,0	cm <sup>3</sup> /1000 strokes		•
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (3,0-4,4)	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,6-3,2		
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500   55-111(40-126)		1500 55-111(40-126)
				Dimonologo

		<u> </u>				
2.3 Fuel deliveries					3. Dimen	ISIONS for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	1680	0			к	3,2-3,4
	1610 1550	max.8,0	(18,0-26,0)		KF	5,7-5,9
	1500	17 0 20 0	(26,7-31,3) (15,5-21,5)		MS	1,2-1,4
	600	17,0-20,0	(15,5-21,5)		svs	max.3,6
					XK	19,5-21,5
					XL	9,2-12,6
switch-off					Α	
electr.	400	bei 2,5 V	0		В	
idle stop	450-550 415	0	(4,0-12,0)		Observations	
End stop	400 500	min.15,0 max.21,0	•			
2.4 Solenoid	cut-in voltag	e 10 rated volt				

BOSCH

WPP 001/4 VWW 1,5c

1. Edition

VE 4/9 F 2000 R 25

R 25 P

Overflow temperature 45° C

supersedes

company: engine:

0 460 494 010

0 460 494 011

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

Charge-air press. bar (kgf/cm²) Difference in Settings Rot. speed delivery cm<sup>3</sup> 1. Settings rev/min 3,5-3,9 1500 1.1 Timing device travel 4,0-4,6 1500 bar (kgf/cm²) 1.2 Supply-pump pressure 2,5(3,0)28,5-29,5 1500 cm<sup>3</sup>/1000 strokes 1.3 Full-load delivery with charge-air pressure cm3/1000 strokes Full-load delivery without charge-air pressure 2,5(3,0)415 6.0-10.0 cm3/1000 strokes 1.4 Idle regulation cm<sup>3</sup>/1000 strokes min.40,0 100 1.5 Full-speed regulation cm<sup>3</sup>/1000 strokes 8,0-12,0 2050 1.6 Start

1.7 Load-dependent port-closing 2. Test Specifications checking values in brackets ( 1800 1000 1500 2.1 Timing device (3,0-4,4)4,5-5,3(4,2-5,6) 1,3-2,1(1,0-2,4) 2000 400 n = rev/min

2.2 Supply pump 5,4-6,0 bar (kgf/cm²) 1,4-2,0 500 2000 Overflow delivery n = rev/min cm<sup>3</sup>/10 s 55-111(40-126) 55-111(40-126)

		33-111(40-	120)	
2.3 Fuel deliveries				
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2060-2160 2050 2030 2000 1500 600	0 17,0-23,0 24,5-26,5 17,0-20,0	(26,7-31,3)	
switch-off electr.	400	bei 2,5 V	0	
idle stop	700 415	max. 2,0	(4,0-12,0)	
End stop	400 50	min. 15,0 max. 21,0		
2.4 Solenoid	cut-in voltag	e min. rated vol	10 V tage 12V	

3. Dimei	nsions for assembly and adjustment
Designation	mm
к	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
svs	max.3,6
+FH	1,8-2,4
A	9,0-14,0
В	10,4-15,6

\* operating stroke (cold-start accel.)

Festoil-ISO 4113

WPP 001/4 VWW 1,5d

1. Edition

VE 4/9 F 1800 R 25-1

R 25-1 P

Overflow temperature 45° C

supersedes VWW company: EA 086

0 460 494 012 0 460 494 013

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers mm

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,5-3,9	mm		
1.2 Supply-pump pressure	1500	4,0-4,6	bar (kgf/cm²)		
1.3 Full-load delivery with	1500	28,5-29,5	cm³/1000 strokes	1	2,5(3,0)
charge-air pressure  Full-load delivery without			cm³/1000 strokes	}	
charge-air pressure  1.4 Idle regulation	415	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.40,0	cm³/1000 strokes		
1.6 Start	1900	4,0-10,0	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. lest Spec	cincations	checking values in br	ackets ( )			
2.1 Timing device	n = rev/min mm	1000 1,3-2,1(1,0-	.2,4)	1500 (3,0-4,4)		800 4(4,3-5,7)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 1,4-2,0				800 8-5,4
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-111(40-12	26)		55-111(4	800 10-126)
2.3 Fuel deliveries		1			3. Dimer	ISIONS for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	1900 1800 1500	.26,0-29,0	(3,0-11,0) (25,2-29,8) (26,7-31,3)		K	3,2-3,4 5,7-5,9
	600	16,5-20,5	(15,5-21,5)		MS	1,2-1,4
					svs *FH	max.3,6 1,8-2,4
switch-off					A	9,0-14,0
electr.	400	bei 2,5 V	0		8	10,4-15,6
Idle stop	700 415	max. 2,0	(4,0-12,0)		Observations  * operatin	g stroke
End stop	400 500	min. 15,0 max. 21,0			(coru-st	art accel.)
2.4 Solenoid	cut-in voltag		10 V   tage 12V			

#### **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,5al

1. Edition

VE 4/9 F 2500 R 16 R 16 P

0 460 494 002 0 460 494 003

Pre-stroke setting

Overflow temperature 45° C

supersedes company:

engine:

EA 086/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

mm

see VDT-W-460/...

Festoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
, 1.1 Timing device travel	1500	3,6-4,0	mm		
1.2 Supply-pump pressure	1500	4,0-4,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	29,9-30,9	cm <sup>3</sup> /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure			cm <sup>3</sup> /1000 strokes		
1.4 Idle regulation	415	6,0-10,0	Sin³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.39,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2670	13,5-19,5	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Specifications		checking values in brackets (	)	
2.1 Timing device	n = rev/min	1000 1,4-2,2(1,1-2,5)	1500 (3,1-4,5)	2000 6,3-7,1(6,0-7,4)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 1,4-2,0		2200 5,9-6,5
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-111(40-126)		2500 55-111(40-126)
		<del></del>	·····	

2.3 Fuel deliveries				
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2800 2670 2500 1500 600		(12,5-20,5) (24,4-29,0) (28,1-32,7) (15,4-22,4)	
switch-off electr.	400	bei 2,5 V	0	
Idle stop End stop	1200 415 400 500	max. 3,0 min.18,0 max.20,0	(4,0-12,0)	
2.4 Solenoid	cut-in voltage		10 V 1tage 12V	

Designation	and adjustment mm
к	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
svs	max.3,6
* FH	1,8-2,4
**	9,0-14,0
A	9,4-12,0
В	

- Operating stroke (cold-start accel.)
- \*\* Two piece control lever XK = 18,6-20,6 mm XL = 9,1-12,8 mm

**BOSCH** 

6

# Test Specifications Distributor-type Fuel-injection Pumps

4

WPP 001/4 VWW 1,6n

1. Edition

VE 4/9 F 2500 R 16-5 R 16-5 P

Overflow temperature 45° C

supersedes

VW

company: engine: 1,6 L

0 460 494 032 0 460 494 033

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mn

2. Test Specifications checking values in brackets (

see VDT-W-460/...

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Fie-Stinke setting	111131				
1. Settings	Rot. speed rev/min	Settings		ଧରିଓଡ଼େair press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,8-5,2	mm		
1.2 Supply-pump pressure	1500	4,5-5,1	bar (kgf/cm²)		
1.3 Full-load delivery with	1500	32,0-33,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 strokes		
charge-air pressure 1.4 Idle regulation	415	6,5-10,5	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2450	14,0-20,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing			_		

2.1 Timing device	n = rev/min mm	1000 2,5-3,4(2,	2-3 6)	1500 (4,3-5,7)	2100 7,0-7,8(6	<del>-</del>
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400			2250 6,3-6,9	
Overflow delivery	n = rev/min cm³/10 s	500 55-111(40-	126)		55-	111(40-126)
2.3 Fuel deliveries		<u></u>			3. Dimen	sions for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2540 2450 2250 1500 600	5,0-13,0 27,8-30,8 21,0-24,0	(30,2-34,8)		k kf ms svs * FH	3,2-3,4 5,7-5,9 1,3-1,5 max.4,8 1,8-2,4
switch-off electr.	400	bei 2,5 V	0		& XK	18,6-20,6 9,1-12,8
idle stop	1200 600 415	max. 4,0 max. 6,0	(4,5-12,5)		Observations  * operat (cold-	ing stroke start accel.
End stop	400 50	min.20,0 max.22,0				
2.4 Solenoid	cut-in volta		n. 10 V Itage 12V			

### **Test Specifications** Distributor-type **Fuel-injection Pumps**

WPP 001/4 VWW 1,5a

1. Edition

VE 4/9 F 2500 R 16-2

0 460 494 006

0 460 494 007

R 16-2 P

Overflow temperature 45° C

supersedes

VW company:

engine:

1500

EA 086/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

mm

2. Test Specifications checking values in brackets (

1000

bei 2,5 V 0

max.3,0

min.18,0

max.20,0

Test Instructions and Test Equipment

2000

Pre-stroke setting

see VDT-W-460/...

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,6-4,0	mm		
1.2 Supply-pump pressure	1500	4,0-4,6	bar (kgf/cm²)		:
1.3 Full-load delivery with	1500	29,9-30,9	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure .Full-load delivery without			cm <sup>3</sup> /1000 strokes		
charge-air pressure 1.4 Idle regulation	415	6,0-10,0	cm <sup>3/</sup> 1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.39,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2670	13,5-19,5	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2.1 Hming device	mm = revitim	1,4-2,2(1,1-2,5)	(3,1-4	•	3-7,1(6,0-7,4)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 1,4-2,0			2200 5,9-6,5
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-111(40-126)		55-1	2500  11(40-126)
2.3 Fuel deliveries				3. Dimer	tor assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	2800 2670	max. 7,0 (12,5-20,5)		к	3,2-3,4
	2500	25,7-27,7 (24,4-29,0)		KF	5,7-5,9
	1500 600	(28, 1-32,7) 17,9-20,9 (16,4-22,4)		MS	1,3-1,5
		,,.		svs	max.3,6
				* FH	1,8-2,4
				**	9,0-14,0
switch-off				A	9,4-12,0

min. 10 V 2.4 Solenoid cut-in voltage rated voltage 12V

400

1200

415

400

500

(cold-start accel.) Two piece control lever XK = 18,6-20,6 mmXL = 9.1-12.8 mm

Operating stroke

Observations

BOSCH

electr.

End stop

Idle stop

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fedérale d'Allemagne par Robert Bosch GmbH.

(4,0-12,0)

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**estoil-ISO 4113** 

### **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,5b 1. Edition

cm<sup>3</sup>/1000 strokes

cm<sup>3</sup>/1000 strokes

En

VE 4/9 F 2500 R 16-4 (P) 0 460 494 030 (031)

supersedes

VW

company: engine:

EA 086/10

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

100

2670

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

1.5 Full-speed regulation

1.7 Load-dependent port-closing

1.6 Start

Settings Charge-air press. Difference in Rot. speed 1. Settings bar (kgf/cm²) delivery cm3 1500 3,6-4,01.1 Timing device travel 1500 4,0-4,6 bar (kgf/cm²) 1.2 Supply-pump pressure 29,9-30,9 1500 2,5(3,0)cm3/1000 strokes 1.3 Full-load delivery with charge-air pressure cm3/1000 strokes Full-load delivery without charge-air pressure 475 6,0-10,0 cm<sup>3</sup>/1000 strokes 2,5(3,0)1.4 Idle regulation

min.39,0

13,5-19,5

				<u> </u>
2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (3,1-4,5)	2200 6,3-7,1(6,0-7,3)
2.2 Supply pump	n = rev/min	400		2200
	bar (kgf/cm²)	1,4-2,0		5,9-6,5
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-111(40-126)		2500 55-111(40-126)
2.3 Fuel deliveries				3. Dimensions tor assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)	Designation mm
C			1	

2.3 Fuel deliveries					3. Dimer	ISIONS for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	2820 2670 2500 1500 600		(12,5-20,5) (24,4-29,0) (28,1-32,7) (16,4-22,4)		K KF MS SVS *FH	3,2-3,4 5,7-5,9 1,3-1,5 max.3,6 1,8-2,4 9,0-14,0
switch-off electr.	400	bei 2,5 V	0		A B	9,4-12,6
kite stop End stop	1200 650 475 400 500	max.3,0 max.4,0 min.18,0 max.20,0	(4,0-12,0)	1	Two piece XK = 18,0	g stroke art accel.) e control leve 6-20,6 mm 1-12,8 mm
2.4 Solenoid	cut-in vol	itage min.	. 10 V			

BOSC

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

46

WPP 001/4 OPE 2,0 b

1. Edition

En

VE 4/9 F 2200 L 28 L 28 P supersedes company:

engine:

Opel TL 0129

0 460 494 009

0 460 494 015

Overflow temperature 45° C

Test Instructions and Test Equipment

Difference in delivery cm<sup>3</sup>

2,5(3,0)

2,5(3,0)

Pre-stroke setting

**Testoil-ISO 4113** 

0,18

 $mm \pm 0.02 (0.04) mm$ 

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)
1.1 Timing device travel	2000	6,1-6,7	mm	
1.2 Supply-pump pressure	2000	6,2-6,8	bar (kgf/cm²)	
1.3 Full-load delivery with	1000	35,0-36,0	cm <sup>3</sup> /1000 strokes	
charge-air pressure Full-load delivery without			cm³/1000 stroķes	
charge-air pressure	250	6,0-10,0	cm <sup>3</sup> /1000 strokes	
1.5 Full-speed regulation	100	min.50,0	cm <sup>3</sup> /1000 strokes	
1.6 Start	2420	12,0-18,0	cm³/1000 strokes	
1.7 Load-dependent port-closing	2000			·

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	1200 2,3-3,3(2,1-3,5)	2000 (5,7-7,1)	2200 6,8-7,8(6,6-8,0)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,4-3,0		2200 6,7~7,3
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-111(40-126)		2200 55-111(40-126)

		35-111(40-120)			
2.3 Fuel deliveries					
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	
End stop	2500 2450 2230 1000 600	max. 6,0 (11, 31,7-35,3 (31, (32, 30,0-34,0 (29,	0-19,0) 2-35,8) 3-37,8) 0-35,0)		
switch-off	400 70	0			
idle stop	370-470 250	0 (4,0	0-12,0)		
2.4 Solenoid	cut-in voltage	10 V rated voltage	12 <b>V</b>		

3. Dimen	sions for assembly and adjustment mm		
K			
KF	5,7-5,9		
MS	1,7-1,9		
svs	max.4,2		
A B	2,6-7,6 10,4-15,6		

#### Observations

Clearance between idle position and stop for increased idling 0,5-1,0 mm.

BOSCH

Testoil-ISO 4113

# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 OPE 2,0 b2

1. Edition

VE 4/9 F 2100 L 28-2 L 28-2 P

supersedes Opel

company:

TL 1029-2 1

0 460 494 060 0 460 494 061

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

0,18

 $mm \pm 0.02 (0.04) mm$ 

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	5,7-6,3	mm		
1.2 Supply-pump pressure	2000	6,2-6,8	bar.(kgf/cm²)		
1.3 Full-load delivery with	1000	35,5-36,5	cm³/1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without	. <b></b>		cm³/1000 strokes		
charge-air pressure  1.4 Idle regulation	250	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.50,0	cm³/1000 strokes		
1.6 Start	2420	12,0-18,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	2000				

2. Test Spe	2. Test Specifications checking values in brackets ( )						
2.1 Timing device	n = rev/min	1200	2000	2200			
	mm	2,3-3,2(2,1-3,5)	(5,3-6,7)	6,8-7,8(6,6-8,0)			
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,4-3,0		2200 6,7-7,3			
Overflow delivery	n = rev/min cm³/10 s	500 55-111(40-126)		2100 55-111(40-126)			

	1	1	•	
2.3 Fuel deliveries				
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2500 2420 2230 1000 600	max.6,0 31,2-34,8 30,0-34,0	(11,0-19,0) (30,7-35,3) (33,7-38,3) (29,0-35,0)	
switch-off electr.	400 70	0		
idle stop	370-470 250	0	(4,0-12,0)	
2.4 Solenoid	cut-in voltage	min.	10 V	

3. Dimens Designation	ions for assembly and adjustment mm
K	
KF	5,7-5,9
MS	1,7-1,9
svs	max.4,2
A	2,6-7,6
В	10,4-15,6
Observations	<u> </u>

L13 **BOSCH**  rated voltage 12V

6

# Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 OPE 2,1c

1. Edition

VE 4/9 F 2200 L 12

0 460 494 001

supersedes company:

engine:

Ope1 TL 1755

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

Festoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	7,5-7,9	mm		
1.2 Supply-pump pressure	2000	6,3-7,3	bar (kgf/em²)		
1.3 Full-load delivery with	1250	37,0-38,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure  Full-load delivery without			cm³/1000 stroķes		
charge-air pressure	300	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	50	min. 45.0	cm³/1000 strokes		
1.6 Start	2420	11,0-17,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in brackets (	)		
2.1 Timing device	n = rev/min mm	600 0,8-1,6(0,5-1,9)3	1250 ,8-4,6(3,5 <b>-</b> 4	2000 ,9)(7,0-8,4)7,	2200 8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 2,7-3,7		2000 6,3-7,3	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-111(40-126)		55-	2200 111(40-126)

2.3 Fuel deliveries					3. Dime	nsions for assembly and adjustment
Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	2620-2750 2500 2420 2230 1250 600	0 max.6,0 30,0-32,5 29,5-32,5	(10,0-18,0) (28,95-33,55) (35,2-39,8) (28,0-34,0)		K KF MS SVS	3,2-3,4 5,7-5,9 1,4-1,6 max.4,8
switch-off	2000	0			A 8	2,6-7,6 10,4-15,6
Idle stop	380-460 300	0	(4,0-12,0)			
2.4 Solenoid	cut-in voltag	min. rated volta				

Testoil-ISO 4113

# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 OPE 2,0 bl

1. Edition

En

VE 4/9 F 2200 L 28-1 L 28-1 P

supersedes company: engine:

0 460 494 025

0 460 494 026

Overflow temperature 45° C

Test Instructions and Test Equipment

Pre-stroke setting

0,18

2. Test Specifications checking values in brackets (

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers  $_{mm}$  ± 0,02 (0,04) mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
, 1.1 Timing device travel	2000	6,1-6,7	mm		
1.2 Supply-pump pressure	2200	6,8-7,4	bar (kgf/cm²)		
1.3 Full-load delivery with	1100	37,5-38,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 strokes		
charge-air pressure 1.4 Idle regulation	250	6,0-10,0	cm <sup>3</sup> /1000 strakes		2,5(3,0)
1.5 Full-speed regulation	100	min. 50,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2400	15,0-21,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	2000				

)

		<del></del>				
2.1 Timing device	n = rev/min	1250 2,9-3,9(2,3	7-4,1)	2000 (5,7-7,1)	220 6,9-7,9(6	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,5-3,				
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-111(40-	126)		220 55-111(	)0 (40-126)
2.3 Fuel deliveries		<u></u>			3. Dimer	tor assembly
Speed control lever	Rot. speed	Fuel delivery cm3/1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop switch-off	2500 2400 2230 1100 600	max. 6,0 31,5-35,5 32,0-36,0	(14,0-22,0) (31,2-35,8) (35,7-40,3) (31,0-37,0)		K KF MS SVS XK XL X	5,7-5,9 1,7-1,9 max.3,6 20,0-22,0 10,8-14,6
idle stop	370-470 250	0	(4,0-12,0)		B X Observations	
2.4 Solenoid	cut-ın voltaç	e min. rated vol				

BOSCH

## **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 VOL 3,6 g

1. Edition

VE 6/11 F 1500 L 19-6

Overflow temperature 45° C

supersedes

engine:

0 460 416 013 Setting of the pointer at a stroke of 1 mm in

Volvo company: T AMD 40-A

relation to outlet "A".

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

**Test Instructions and Test Equipment** 

 $mm \pm 0.02 (0.04)$ 

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Śettings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	2,6-3,0	mm		
1.2 Supply-pump pressure	1200	4,7-5,3	bar (kgf/cm²)		
1.3 Full-load delivery with	1400	69,5-70,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 strokes		
charge-air pressure  1.4 Idle regulation	350	17,0-23,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 70,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	1550	37,0-43,0	cm <sup>3</sup> /1000 strokes	<u> </u>	
1.7 Load-dependent port-closing					

2. Test Spe	ecifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min	800 1,1-1,9(0,8-2,2)	1200 (2,1-3,5)	1500 3,8-4,6(3,5-4,9)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 1,9-2,5		1500 5,7-6,3
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-111(40-126)		1500 55-111(40-126)
2.3 Fuel deliveries	<u> </u>			3. Dimensions tor assembly and adjustment

2.3 Fuel deliveries					3. Dimen	SiONS for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	1650 1550 1400 1200 600	max.15,0 67,0-69,0 53,5-58,5	(36,0-44,0) (67,7-72,3) (65,7-70,3) (53,0-59,0)		K KF MS SVS	5,9-6,1 1,4-1,6 max.2,3
switch-off	1500	0			<sub>A</sub> X XK <sup>B</sup> X XL	18,7-20,7 7,8-11,1
End stop	500-580 350 100-120 220	0 min.70,0 max.52,0	(16,0-24,0)		Observations	
2.4 Solenoid	cut-in voltage	min.	10 V tage 12V			

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# **Test Specifications** Distributor-type Fuel-injection Pum<sub>l</sub>

WPP 001/4 OPE 2,1d

. Edition

VE 4/9 F 2200 L 27 0 460 494 008

Overflow temperature 45° C

supersedes

Ope1 company:

engine:

TL 1755

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

estoil-ISO 4113

2. Test Specifications checking values in brackets (

cut-in voltage

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	7,5-7,9	mm		<u>;</u>
1.2 Supply-pump pressure	2000	6,2-6,8	bar (kgf/cm²)		
1.3 Full-load delivery with	1250	36,0-37,0	cm <sup>3</sup> /1000 strokes	ļ	2,5(3,0)
charge-air pressure Full-load delivery without	****		cm³/1000 strokes		
charge-air pressure 1.4 Idle regulation	250	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.50,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2420	13,0-19,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	2000			·	

OP-						
2.1 Timing device	n = rev/min	600	1	250		2000
	mm	0,9-1,9(0,	7-2,1) 3,8-4,	6(3,5-4,9) (	7,0-8,4) 7,	7-8,5(7,4-8,8)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 3,0-3,0	6			2200 6,7-7,3
Overflow delivery	n = rev/min	500				2200
	cm <sup>3</sup> /10 s	55-111(40-	126)			1(40-126)
2.3 Fuel deliveries	<u></u>				3. Dimen	Sions for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2500 2450 2230 1250	30.7-33.3	(12,0-20,0) (29,7-34,3) (34,2-38,8) (30,0-36,0)		K KF MS	3,2-3,4 5,7-5,9 1,7-1,9
	600	31,5-34,5	(30,0-36,0)		svs	4,6
switch-off					A	2,6-7,6
electr.	70	bei 2,5 V	0		В	11,4-15,6
idle stop	370-470 250	0	(4,0-12,0)			

BOSCH

2.4 Solenoid

min. 10 V

rated voltage 12V

## **Test Specifications** Distributor-Type Fuel Injection Pump

WPP 001/4 SAV 3,0a 1

1. Edition

En

VA 4/100 H 1600 BR 101 0 460 304 055 Setting of the pointer at a stroke of 1  $\ensuremath{\mathsf{mm}}$  in relation to outlet "A".

supersedes

company

Renault 599-01/03

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test intructions and Test Equipment **VDT-WPP 161/4 B** 

Pre-stroke setting

2. Test Specifications

 $0.1 \text{ mm} \pm 0.02 (\pm 0.04)$ 

Pre-setting see reverse side

				e-setting see revers	
1. Settings	rev/min	Settings		Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	300	4,0-5,0	mm		
1.2 Supply pump pressure	800	4,3-4,8	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1000	53,5-54,5	cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure  1.4 Idle speed regulation	300	7,0-13,0	cm <sup>3</sup> /1000 strokes cm <sup>3</sup> /1000 strokes		3,0
1 5 Start	100	mind.76,0	cm <sup>3</sup> /1000 strokes		
1 6 Full-load speed regulation	1670	34,0-42,0	cm <sup>3</sup> /1000 strokes		

Checking values in brackets

2.1 Timing device	rev/min mm	44-530 (370- Start	(3,7-5,3)	1450-1570 13,7-14,4(13,4-14,7)
2.2 Supply pamp	rev/min kp/cm <sup>2</sup>		800 (4,1-5,0)	1500 6,8-7,4(6,6-7,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 mind. 25	1500 85-150(70-165	
23 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm²
End stop	Full	1750-1810 (1730-1830) 1750 1670 1600 1000 500	0 max. 14,0 (33,0-43,0) 46,75-49,25 (45,75-50,25) (53,0-55,0) 48,75-50,25 (47,75-51,25)	
	Stop	1600	0 ,	
idle stop	Full	320-420 (300-440) 300	(6,0-14,0)	
	Start	100 110-210	mind. 76,0	

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# Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 45 - 8^{\circ}$ $\delta = 60 + 8^{\circ}$	Pump Dimension IV = - mm Dimension V = - mm

#### Instructions on special adjustment

Test sequence

Drive the pump at 100 min<sup>-1</sup> below rated speed and bleed the damping device. (On design 2 at the bleeding screw, on design 1 and 3 by loosening the damping bushing. Tighten the damping bushing again afterwards and with design 2 see that the center mark on the screw plug points upwards). Switch off the test bench.

Set camshaft projection of load stop to stop plate (dimension "a").

#### Set idle speed before full-load speed regulation

Set idle stop screw (dimension "c").
Screw back the stop screw of the load lever.
Limit the path of the stop bolt (dimension "b") (e.g. with setting gauge EFEP 429 - 1 687 970 019) and move up against load lever with hooked-in cylindrical helical coiled spring.

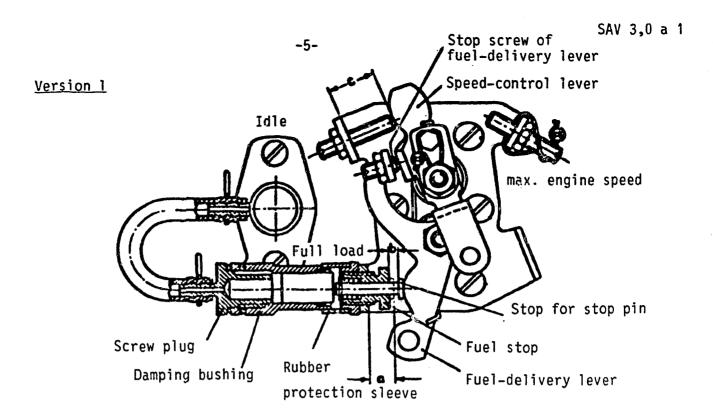
- Set idle quantity at the control throttle. (a)
  Then position the speed lever so that it touches the idle stop.
  (In doing this do not turn the control throttle, but, if necessary, adjust the speed lever after loosening the clamping screw on the link.
- Set idle speed regulation. (b)
  Place the stop screw of the load lever against the lobe of the speed lever.
  Remove the fixing for dimension "b".
- Check the starting delivery. (c)
- Set the regulation at the max.-speed stop-screw. (d)
- Adjust full-load delivery. Correct by adjusting the delivery stop. (e) If full-load delivery has been changed, check (a), (b) and (d) again.
- Tests according to section B. (f)
- Check fuel deliveries according to section C. (g)
- Check by measuring. (h) To do this limit dimension "b" again (see above) and move up against load lever with hooked-in cylindrical helical coiled spring. If necessary, correct delivery within the tolerance of dimension "b". Then move speed lever up against idle stop screw and, if necessary, adjust the stop screw of the load lever. Remove the fixing for dimension "b".
- Carry out a stop check. (i)

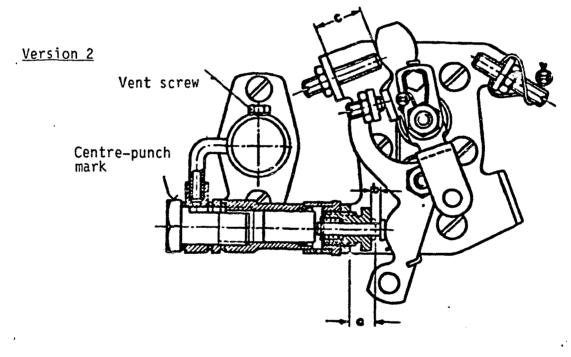
#### Damper check!

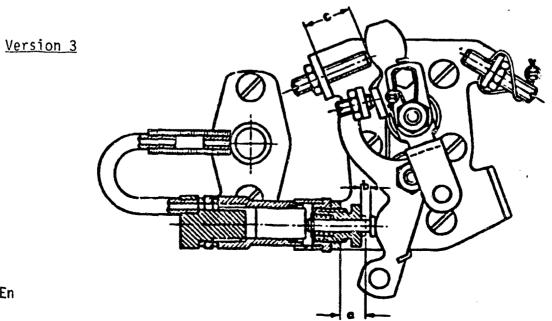
Check whether hole in rubber protection sleeve faces downwards. Run pump at 100 min-1 below rated speed. Quickly move speed-control lever to idle position. Stop pin must move rapidly in direction of injected-quantity lever. Move speed-control lever quickly to max. position. Within the stated time, the stop pin must be pressed against its mechanical stop by the injected-quantity lever. Leaks at the damper need not be taken into account; one droplet per minute is permissible.

#### Settings:

Dimension I = 7.0 mm "Retarded" Dimension "b" =  $3 \pm 0.2$  mm Dimension II = 14.0 mm "Total" Dimension "c" =  $14 \pm 1$  mm Dimension III = 35.8 mm "Spring inst." Running time against inj-quant.lever = 2-4 s Dimension "a" = 10 + mm







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